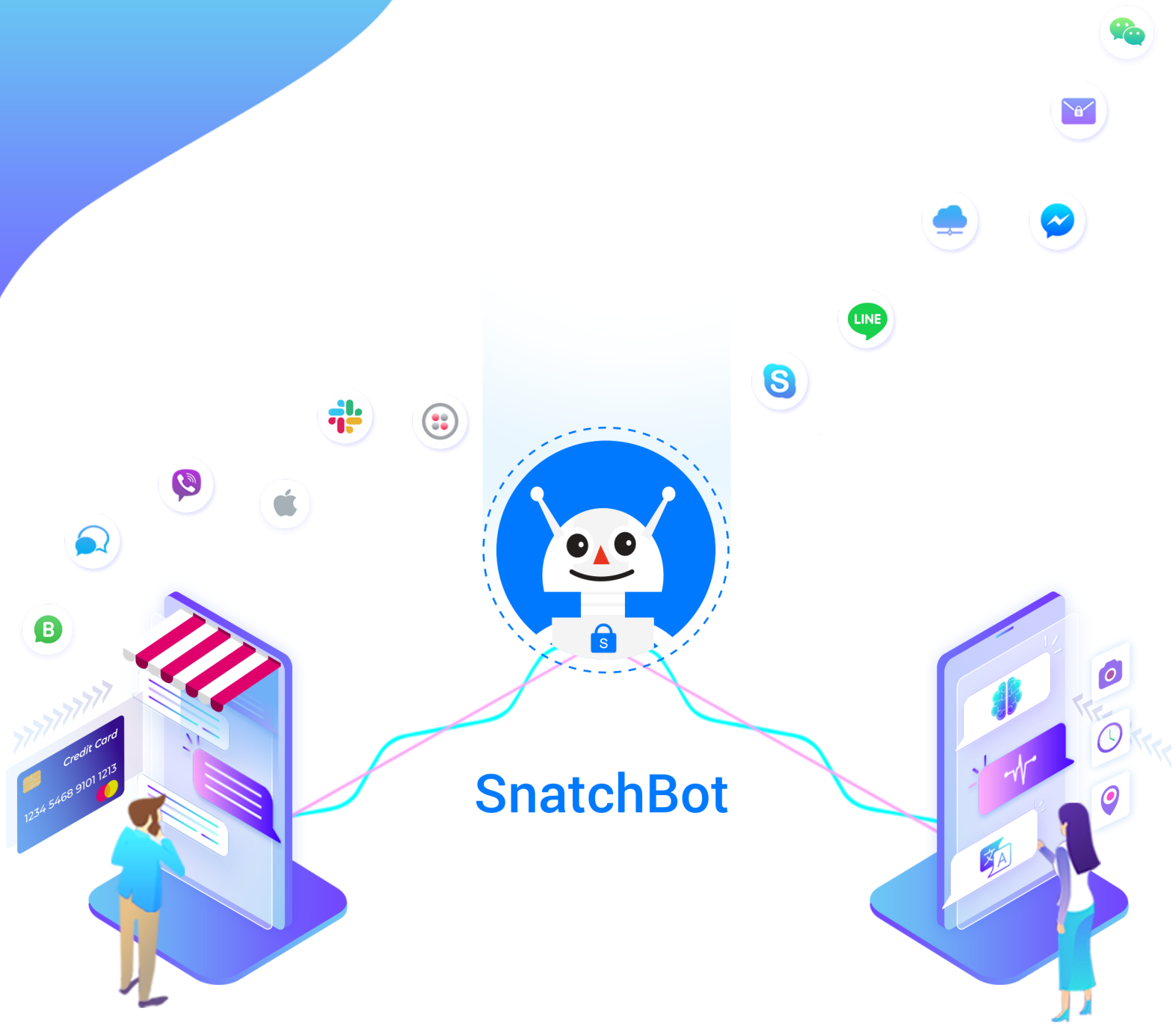

EVERYTHING YOU NEED TO KNOW TO CREATE YOUR OWN

By the SnatchBot team

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Introduction

We are living through a chatbot revolution that will be extremely important to human culture. In the last two years, this revolution has been gathering pace and while it cannot be considered as deep a change as the development of the internet, the massive deployment of chatbots will certainly result in a more profound change to our lives than the introduction of apps to our devices. And in the longer term, we might look back at the 2017 – 2027 decade as being one in which the essential tools were fashioned for the emergence of a true artificial intelligence.

Chatbots are already everywhere. As some of the chapters in this book detail, they are present in e-commerce, banking, health care, education, customer service, insurance and real estate. And they are working for companies great and small: from the café with a bot to manage bookings on its Messenger page to government departments with bots to assist them handle thousands of daily queries.

Crucially, from 2017 the technology around chatbots reached a point where anyone, with no coding skills whatsoever, could create one. It was a tipping point like that which arose with websites. There was a time, around 2004, when suddenly it was no longer necessary to learn CSS to HTML to build websites. The ability to make websites became democratised: you didn't need to hire a specialist, you could do it yourself.

Similarly, SnatchBot went live in 2017 offering easy-to-use tools to make chatbots, including ones with sophisticated Natural Language Processing (NLP) and Artificial Intelligence (AI). Behind the scenes, we did the heavy lifting to allow chatbot builders a simple and intuitive experience. What we achieved was liberating. Anyone, sincerely, anyone can make their own chatbots. And with the coding side taken care of, chatbot builders are able to concentrate on the creative aspect of chatbot building: the construction of thoroughly engaging experiences for users that deliver on whatever task the chatbot has been implemented to solve.

With this book, we want to encourage everyone interested in chatbots to have a go at making one for themselves. If you are a development company, wanting to offer chatbot building as part of your repertoire, then this book will more than get you started, it will bring you to the position of being able to create and sell successful chatbots. If you are exploring chatbots because you have an interest in purchasing and deploying them, then this book will help you understand the concepts and to experiment for yourself. Our goal is that you'll be able to either build the bot you need for yourself or commission one from a thoroughly informed position.

This book consists of two sections. First of all, we run through the history of chatbots, with some thoughts about the future and instances of how chatbots are changing cultural activity in all sorts of spheres. The more practical minded reader might be impatient to get on to Part 2: Building Your Chatbot. But it is worth at least dip into some of the earlier material. These chapters are well researched, stimulating and have important insights.

Several of the chapters are dependent on Chris Knight's ever-fascinating online publications and we thank him for permission to reuse them in this book. If you want to stay up to date with the latest news around chatbots, we recommend following Chris on TheChatbot.Net.

The SnatchBot team

Part 1: Explaining Chatbots

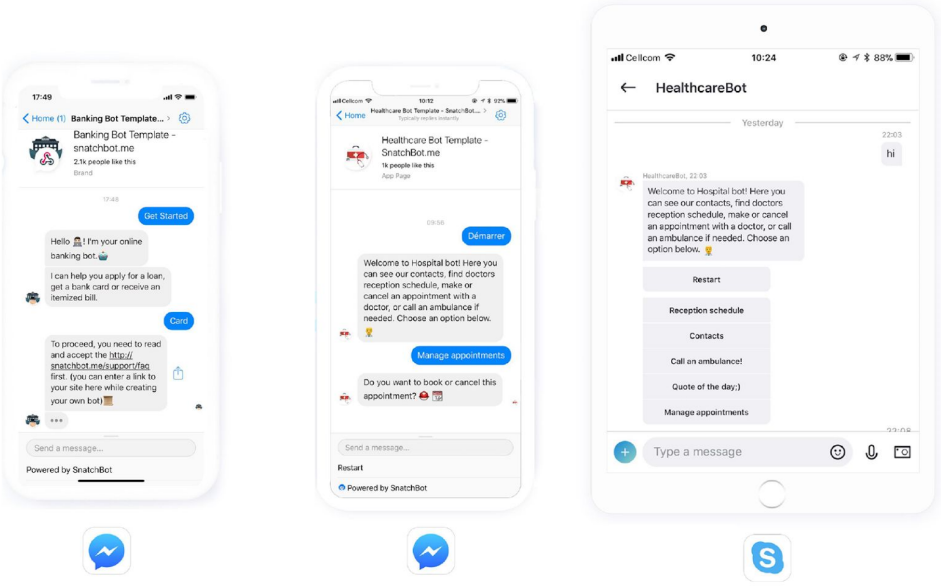
Chapter 1 What is a Chatbot?

A chatbot is a computer program written to participate in a conversation. Typically, chatbots are written to interact with humans (rather than other chatbots) and they do so for an extremely wide variety of reasons. In business they are proliferating as an alternative to websites and apps: instead of a customer having to take the initiative by searching through website pages or downloading an app, the chatbot provides the customer with an interactive guide on their messaging channel, one which can orientate them towards the product, service or information they are seeking and even arrange payment and shipping. Organisations that provide a great amount of online information for clients (such as healthcare organisations or government bodies) use chatbots to help clients get the information they want via a conversation rather than being put on hold or attempting to use am internal search engine. The particular advantages of this for the client are that of getting an immediate response and being able to focus the query very quickly on the right information.

Plus, while some technology can be intimidating, all humans are good at conversation: it's fundamental to our nature. So whereas not everyone can download apps or use search engines effectively, everyone can interact with a chatbot.

Chatbots exist for hundreds of other reasons, including just for the fun of the conversation. There is a website with a chatbot, Mitsuku, that claims, 'you need never feel lonely again.' And while Mitsuku is primarily there for the enjoyment of chatting to her, there is a serious side to this claim. There is scholarly evidence for the fact that any kind of conversation, including that with a chatbot, is better for human wellbeing than none at all.

You can encounter chatbots on various different platforms. When you ring an organisation, for example, and get through to recordings which you navigate with your response, that's a kind of voice-based chatbot. Google's Assistant and Apple's Siri are also voice-based types of chatbot. As for text-based chatbots, you are likely to see them pop up on websites with increasing frequency. But the real reason that chatbots are becoming so pervasive is that people are spending more and more time messaging each other and less time browsing websites. Instead of leaving your channel (e.g. Facebook Messenger) increasingly it is via chatbots that people connect to the wider online world.



Chapter 2: A Brief History of Chatbots

By definition, a chatbot is a computer program which conducts a conversation. Less literally, you can look at a chatbot as software that mimics the experience of chatting with a fellow human. While the recent meteoric rise of messaging apps has brought chatbots to prominence, they have existed in one context or another for a decades.

The Birth of Chatbots

ELIZA, created between 1964 and 1966 by German-American computer scientist Joseph Weizenbaum, is widely considered to be the first chatbot. ELIZA gained recognition for its ability to trick humans into thinking that they were having a conversation with another real human. Interestingly, ELIZA was not created for any sort of commercial application. Rather, ELIZA was built to parody 'the responses of a non-directional psychotherapist in an initial psychiatric interview'. ELIZA simulated conversation by pre-setting text outputs to be triggered by specific text inputs. If that sounds familiar, that's because it's the same structure that most of today's chatbots use. The creator anticipates certain user inputs and sets up the branching paths of the conversation, to be triggered when these inputs appear. Going beyond this style of build is among the most important next step in the Artificial Intelligence and Natural Language Processing fields.

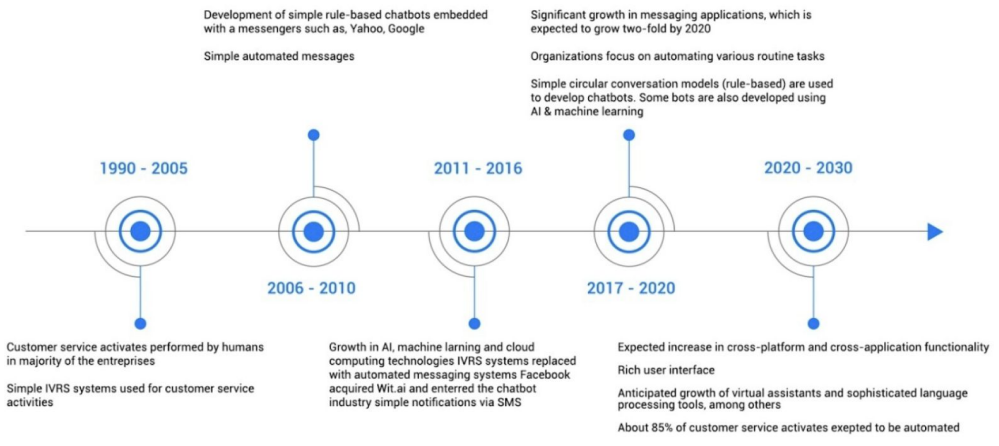
Next Steps

In the mid 1990s, various versions of chatbots began to appear. Though it's different from how we perceive a chatbot today, one prominent example was Ask Jeeves (now Ask.com). Existing as a search engine, Ask Jeeves encouraged users to input what they wanted to know in the form of a question. This was a significant departure from traditional search engines such as Google and Bing. Rather than just respond to a slew of words, Ask Jeeves utilized Natural Language Processing in an attempt to make searching for information more natural. Unfortunately, this approach was not successful and was ultimately defeated by the titan search engines we use today.

Modern Times

Over the past few years, chatbots have risen to centre stage. While the growth of messaging channels has contributed to this move, the fact that some of the channel providers have opened up and allowed the use of chatbots has also been a primary driver of growth. With Facebook, Microsoft and a variety of other tech giants embracing chatbots, there's been exponential growth for the medium. A small sample of the industries they now occupy is provided below.

Chatbot Industry Evolution



Customer Service

Online customer service has proven to be fertile ground for chatbots to root down and gain traction. Many businesses and services have moved away from using call centres and are instead tasking chatbots with answering and directing common customer inquiries. This includes large entities such as Citroen, Royal Bank of Scotland, Renault and Lloyds Banking Group. Chatbots provide a number of advantages over traditional human customer service. First, they are less expensive than paying humans and require none of the HR-related spending associated with the hire of actual people. Plus, they never call in sick. Second, they can analyze questions and provide responses at a much more rapid pace than a human can.

Marketing

From 2017, 'having a conversation' with the consumer became a critical aspect of many brands' marketing strategies. Chatbots allow brands to interpret that idea literally. The entertainment industry has been a clear first mover in embracing chatbots for marketing purposes. A likely reason for this is a chatbot's ability to simulate conversations with characters, such as a popular musician or film character. Thus there are chatbots mimicking everyone from pop music artist Katy Perry to Spock from Star Trek.

App Replacement

From mid-2017 the number of app downloads decreased dramatically. This has resulted in a challenge for many companies to find a channel in which they can deliver their digital services to customers. Chatbots placed in popular messaging channels such as Facebook Messenger, WeChat, Viber and Telegram provide a solution to this gap.

Among the companies who were quick to use chatbot technology were Uber and Dominos Pizza. Uber users can now request, track, and pay for an Uber without leaving their Messenger, Telegram, and Slack conversations. Dominos takes a similar approach, allowing hungry customers to place their order and monitor its progress within a range of platforms including, but not limited to, Messenger, Echo, and Android. This type of medium is often referred to as 'conversational commerce'. Rather than a static purchase process, users interact and make purchases in a back-and-forth digital conversation.

User Acceptance Grew Throughout 2018

2018 saw a big rise in the number of chatbots available to help customers and a steady rise in their acceptance and appreciation. A report from *Usabilla* highlighted that 36% of people surveyed (1,000 Americans in the summer of 2018) would head straight for the chatbot over human support. Also, 54% would choose the chatbot if it would save them around 10 minutes on hold or from having to talk to a real agent.

Bots and other automation tools are taking up much of the load in key verticals, including banking, hospitality/travel and retail. The report highlighted that 70% of people surveyed had already used a chatbot and of those who hadn't yet been engaged by a bot on social media or a website, 60% would feel comfortable in doing so. By 2018, it was clear, therefore, that the age of bot-fear was rapidly receding.

If your chatbot, or planned project, can hit that mark, prepare to experience dramatic savings in efficiency and a boost in customer satisfaction. Banks lead the way in acceptance and customer satisfaction, often due to the quick-and-focused nature of customer queries, like balance checks and transfers.

The Bot vs Person Equation

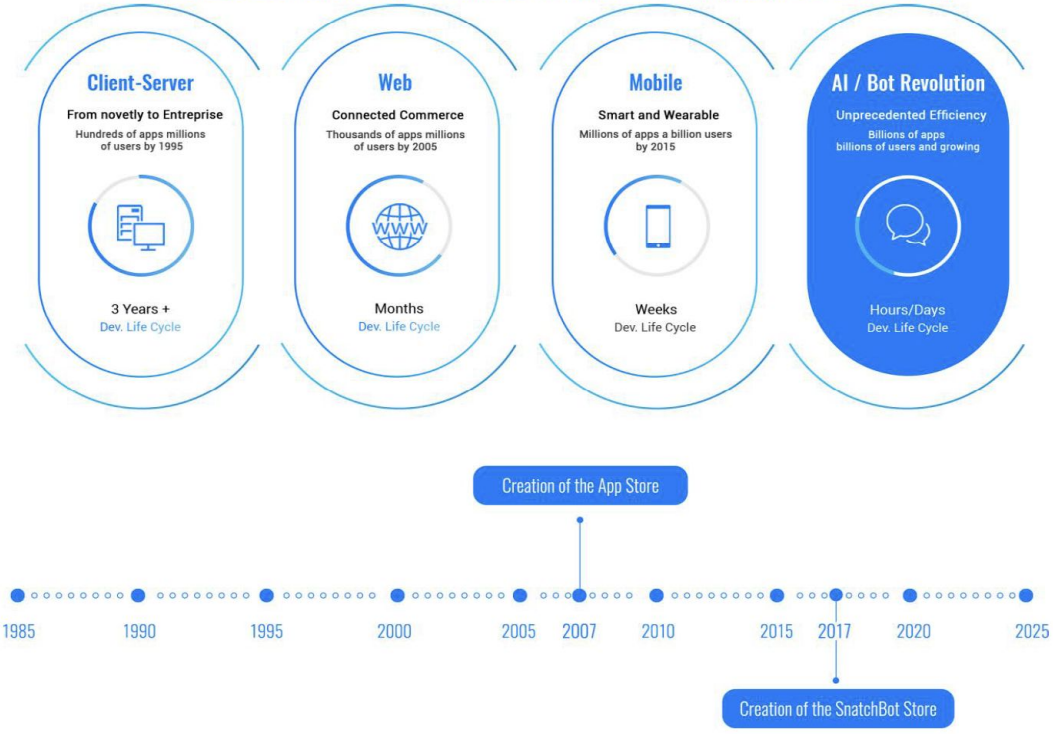
Extensive testing and checking that the bot meets all customer needs is crucial as 74% of the survey reported they would stop doing business with a company if they had a bad experience. Therefore while the drive to automation is inevitable for all businesses, a balance needs to be drawn between where human contact is more desirable or efficient and where the bots can successfully be applied to handle high volumes of contacts that may start out with simple queries, but the expectation is that over time more complex tasks will be handled by the bot.
Bots with conversational charm will slowly improve how people perceive the experience of talking to a chatbot and we can expect the demand to talk to a person falling away in the coming decade.
Of course, the US is its own distinct market, and large swathes of Asia are digital natives in a world where a human agent is a rarity, so don't rely purely on this data when planning an AI. Younger generations are also more used to dealing with AIs and bots, but even they will sometimes feel the need for human contact.

As more data comes to light and bot creators highlight their successes, the companies holding out against chatbots will start to deploy them as an inevitable part of doing business. Expect plenty more bots, ones that become smarter and faster, as experience and development technology continues to improve satisfaction levels and reduce resistance even further.

Moving Forward

The future has never been more ripe for chatbot success. Messaging channels are embracing chatbots and providing them with advanced technical capabilities. Brands are increasingly more open to the advantages this tech helps them gain. And there is a dynamic in the current situation that might well lead to a massive leap forward for chatbots, beyond anything that apps achieved: new technology makes it possible, simple even, for anyone to create a chatbot. We are floating in the rising waters of a tsunami of chatbot creation and should millions of crowdsourced chatbots be linked in a fashion that allows them to learn from each other's NLP models... well, that would be the basis of a revolution more profound even than the internet

From Client-Server to Web to Mobile to AI revolution (from 1985 to 2025)

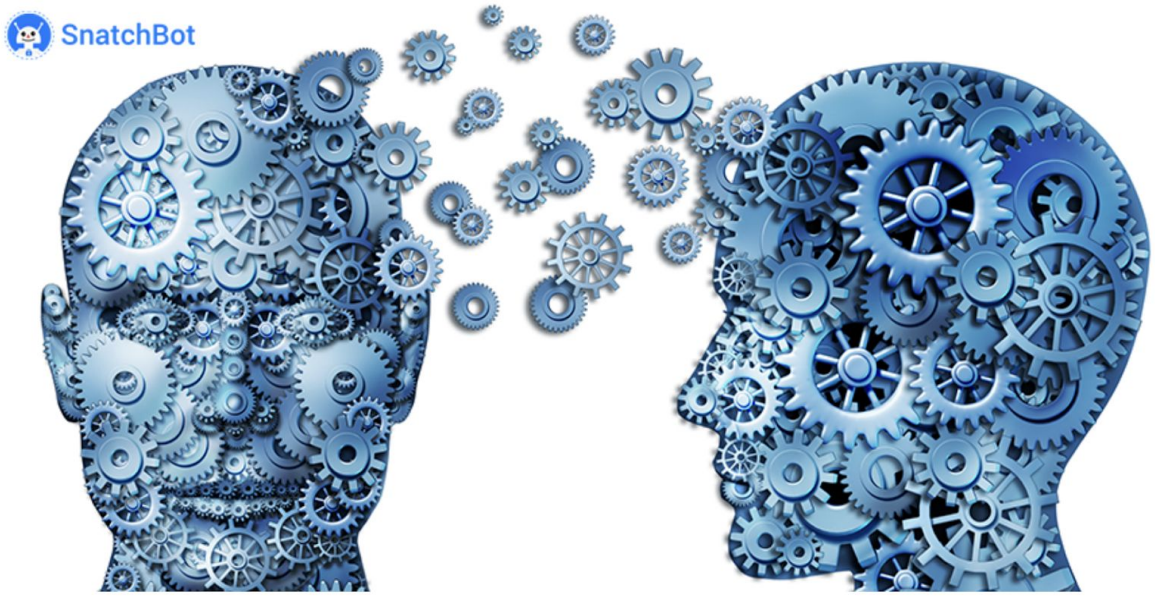


Chapter 3: The A to Z of chatbots

Chatbots might be a new technology to many, but they are already a key tool for huge numbers of businesses, providing increasing value to their customers with useful information. Rather than take the grand tour of product brochure pages, here are the key terms to consider when looking for a chatbot suite or tool to build your creations.

Artificial Intelligence is a major buzzword. Chatbots don't need AI to succeed, but boy does it help. AI helps bots better understand the questions put to them by users through natural language processing analysis of the text to discern key phrases. AI can also provide smart searches of wider information sets to help provide answers to more open-ended questions that a simpler bot might not understand.

Business use cases for bots are growing, from the established basics like customer service and taking bookings to a growing range of sales and upselling from the bot. Advanced use cases include deep conversations for medical, legal or other purposes. Whatever bot plans your company has, they will only succeed if it fits in with the business goals, improving performance, efficiency and creating new opportunities.



Chat quality is the same as when we judge another person by how they speak. If your chatbot comes across as dumb and lifeless, people won't want to engage with it. Work hard on making your chatbot text, lively, pithy and to the point.

Data life is how long the content of a chat remains on your systems and what other services can access it. In some cases, advanced bots find it useful to access previous conversations to shorten new queries or retain previous answers. Data protection laws however, and guidelines might come in to play, so ensure your business has all the legal and ethical angles covered when retaining chatbot data.

Enjoyment of a bot might not be a high priority for businesses such as a car part ordering or a similar service. Yet, other bots like those of charities, schools, fun brands and entertainment services need to be actively engaging, so users enjoy talking to the bot. Make the bot fun first and informative a close

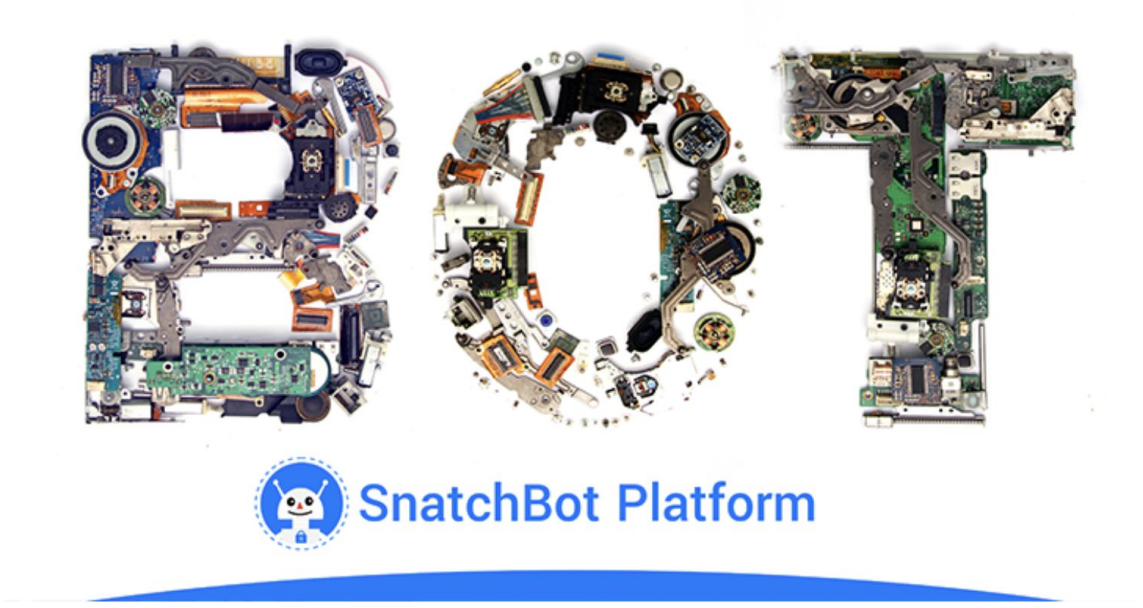
second to capture the interest and hearts of visitors who will appreciate the love and interest from a bot ahead of the core information.

Faceless chatbots? Don't worry about it, your bot doesn't need an image to go with it. But, if your business has the inclination, then bots can have digital faces, bodies, whole AI personalities crafted for them to make them more accessible and engaging for customers. Companies like Expressive AI can give you bot a face from a cartoon.

Games, quizzes, exams and other set-response tests, either for fun or education, are a useful way that chatbot platforms can deliver tests. Bots can rapidly announce personal scores and overall results, with back-ends providing team scores or access to competition prizes. With job interviews and other wider conversations being held by bot, there are plenty of ways to exploit them for engagement.

Happiness is something that is rarely found in technology. iPhones, smart home devices and games machines might deliver a positive experience. But can technology really make someone happy? Chatbots are in the frontline of customer services, where the core aim is to make each person happy. Businesses need to remember that when creating their bot, not just delivering a positive outcome, but crafting it in a way that makes the customer happy.

Intent is what a user is trying to achieve with your chatbot as part of their input. If they say 'When is the next flight to Madrid?' the intent is to find out flight times that are immediately available. The bot should be able to discern the timeframe from such a query and provide actionable information based on the keywords in the text.



Julie does it best, as you would expect from the massive infrastructure and needs of US rail giant Amtrak. When it comes to chatbot success stories, there are many to look up to, but Julie is regularly cited as delivering the goods and passengers, with the right information, helping streamline the customer service needs of hundreds of thousands of daily commuters. When planning your business chatbots, look at how Amtrak delivers Julie or how any of the smaller success story companies have transformed or boosted their business through the use of bots.

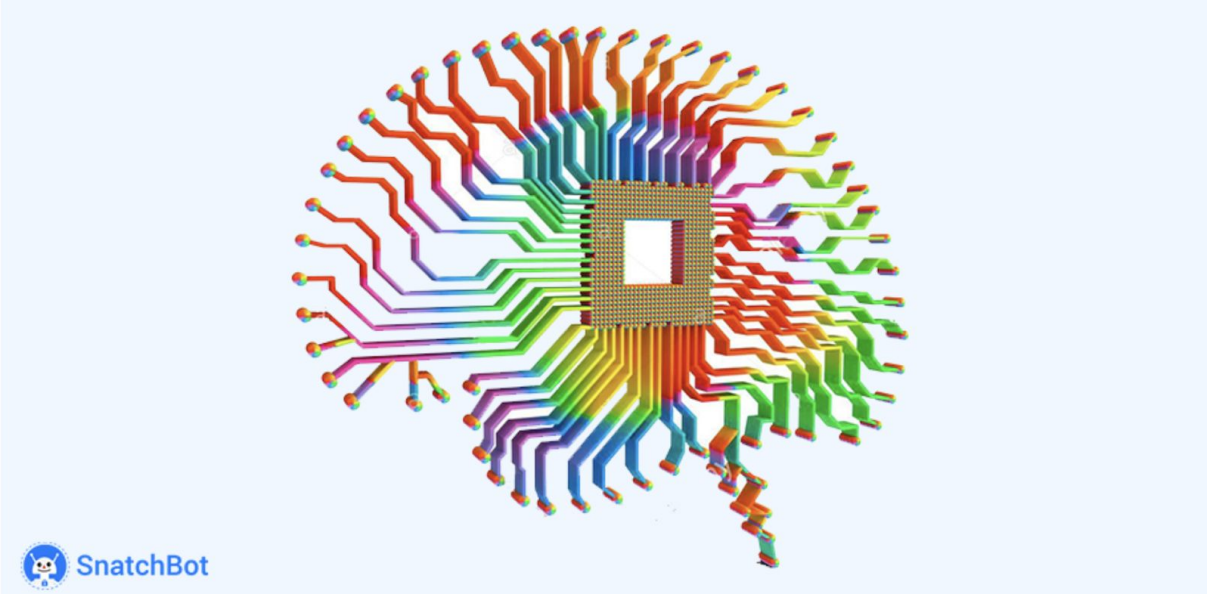
Keep it simple. For a small or large business, sinking time and effort into a major bot project can lead to over complication. Create your first bot and get it out there when it is capable of delivering an

overall high-quality service, then aim for perfection and the extra tweaks that will make it stand out from the growing number of rivals in your market.

Language support is a growing feature of bots, enabling them to deal with customers from around the globe and help a business expand without adding bloat to the organisation. Delivering messages and translating responses can be handled by a growing number of bots, helping the company do business in new territories and handle queries from any time zone.

Money is at the root of most business transactions and bots can join in the fun, offering sales, upgrades, accessories or additional services to a customer based on their previous purchases and needs. Most bot packages can offer PayPal and other payment services within the bot to bring revenue into the business without the need to talk to a customer service agent or go through a typical sales channel.

Natural Language Processing (NLP) is a key part of chatbot technology, allowing the bot to inspect user inputs and break down sentences into words, establish what the important elements are and respond appropriately. More bots feature AI elements like NLP, natural language understanding and growing deep learning capabilities to extract meaning and understanding to improve the quality of conversations. While there remains a lot of hype around AI technologies, the core benefits help you build a better bot, and you shouldn't be put off by the jargon or hype: adding NLP to a bot is not a complicated task as we'll see in Part 2.

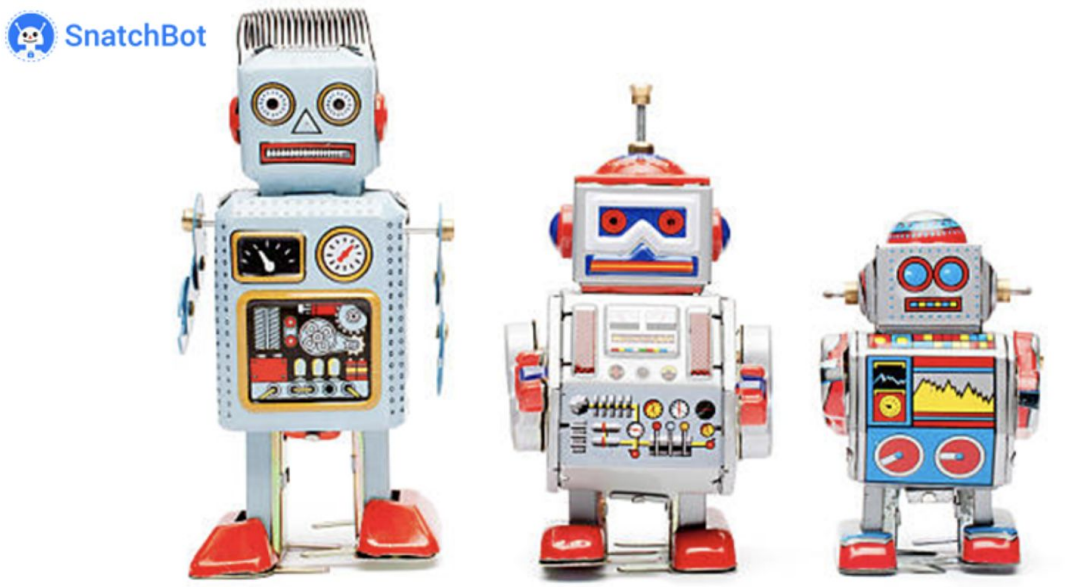


Open-mindedness is a growing part of a bot's success. While your business might have a male or female dominated clientele, the bot needs to appeal to all audiences. Health bots need to understand the differences in age group, while mental health bots must be mature and sensitive enough to be able to appreciate the variables in gender, emotional state and other aspects without causing unintended offense. All of these require extensive testing with live users to totally master these nuances.

Personality is something that every chatbot should have. Many businesses are institutionally afraid of giving a bot a sense of humour, or making their virtual representative seem overly chatty. But, people expect and need a degree of personality in a bot to encourage them to talk to it. Brands are more likely to give a bot personality, based on their products or the type of conversational output their social media teams use. Any business should be open to giving their bot a bit of character and the basics of some too-and-fro in the chat.

Quality is at the heart of a chatbot's reason for existence. They need to provide high-quality information rapidly to satisfy the customer. To create that quality, companies need to study best practices, master brevity to deliver concise information and learn from both successful and unsuccessful outcomes what works and what doesn't.

Rich content means a bot doesn't have to be just words. Bots can be used to show pictures of products, run a video to help explain a support issue, or use audio and music to add a more engaging tone to the conversation and provide other benefits. In short, don't think a chatbot has to be solely about the word content, find areas where you can add colour and visual flair to make it more useful and impressive.



Supervised learning is how chatbots can be trained through machine learning to deliver better results. Plain machine learning is how the bot trains itself, but supervised learning lets the bot make suggestions for a better response, with a human trainer selecting the best answer or suggesting a more refined version. Live bots can also ask a human supervisor for confirmation that they are taking the right approach with a customer.

Thank you and please are some of the most powerful words in the English language. Remember to include them when your bot is welcoming people to the service, providing information and soliciting responses. Apologies for delays or having to hand the conversation can be done in a positive manner, but remember the basics of politeness.

Unified approaches to chatbot launches should see the bot's launch clearly highlighted and advertised, with customer awareness sessions or information to teach people what it is and what it does. Launching on social media platforms, messaging tools, collaboration services, apps and other avenues show the business is serious about its bot efforts, and less likely to consider it a sideshow or experiment they don't mind failing.

Virtual Assistants like Siri and Alexa are rapidly becoming synonymous with chatbots as a technology, despite the two starting at very different ends of the IT spectrum. Chatbots started out as a simple text-based help service for websites or apps, while the VAs provided cloud-driven voice assistance on smartphones and smart home devices where voice interaction made for simpler interaction. Both

technologies are borrowing from each other and merging to provide best-of-breed help, wherever the user is, and the trend will continue until VAs and Bots are largely one and the same.

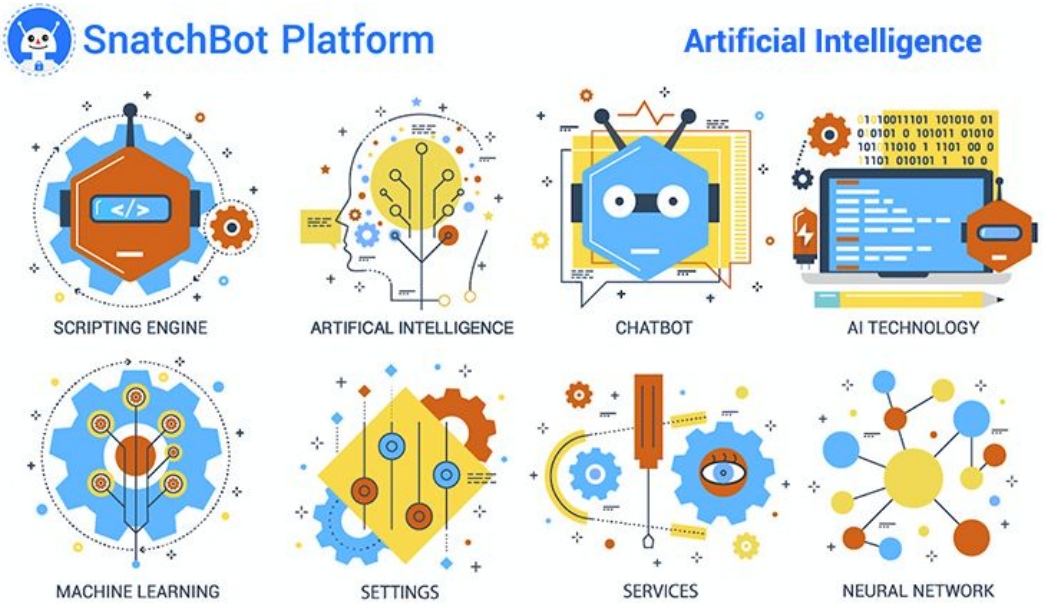
Wizards are just one of the tools that any business can use to create a feature or product. The major vendors like to sell their chatbot products as magical with all the AI bells and whistles. But any company can build a chatbot using a What You See… tool or wizard that makes the building process a block-by-block approach.

e**X**tend your bot as customers get used to the original features and treat it as a regular part of the business. The more you can add to the bot, in the form of information services, wider sales offering or greater knowledge bases, that provide more reasons to use it will cement the bot in the minds of customers as a truly useful tool.

Yesterday is the day you should have launched your bot, or last year. But since there's no time like the present, focus your IT team or marketing department on building a bot that can deliver the required level of service to customers as quickly as possible. Your rivals will already have products on the market, or their own plans, and the longer you wait, the further you will be behind in chatbot development experience, customer satisfaction and other areas, just as market acceptance becomes universal.

Zealotry is something that chatbots should avoid. While they can recommend your products or brand, having an overkeen chatbot monastically spouting the company slogan or every single little feature of a product is not what customers need from a bot service, they need help, advice, options and a reasonable level of engagement, just leave the PR bullshit behind.

Chatbots need not be complicated, but they exist as part of a complex world of IT, digital services and an increasingly confused customer landscape. Among all the jargon and buzzwords, your customer should only see a helpful tool that makes their life easier and delivers valuable information or resources.



Chapter 4: Machine Learning, Natural Language Processing and Artificial Intelligence

You can make perfectly effective chatbots by planning a conversation in which the user taps buttons and follows a fixed route from start to finish. Yet for a truly conversational experience and for many situations where you want the conversation to handle issues that cannot be simply addressed by buttons, you need your chatbot to be able to listen to inputs that have not been pre-prepared and understand them. This is where the terms Machine Learning, Natural Language Processing (NLP) and Artificial Intelligence are relevant. There is a certain amount of mystique about these phrases, especially the last, but the concepts are neither difficult to understand, nor to implement.

Machine Learning is the label given to processes that allow a computer to take feedback from data and adjust its own responses in the light of that feedback. There is a parallel in this to human learning, in that often people do learn from trial and error, but of course the human mind can make leaps of understanding that are entirely absent from the number crunching iterations and subsequent adjustments that go under the name Machine Learning.

The approach by which sentences in human languages are broken down to give information to software is defined as Natural Language Processing (NLP) and Machine Learning is an essential feature of NLP, as the software attempts to successfully respond to the human phrase through repeated trials.

As with the term 'learning' in Machine Learning, 'intelligence' in Artificial Intelligence (AI) is a far shallower concept than the human version. For machines, AI currently means the ability to make decisions based on algorithms and past experience. This is a concept that is closely related to Machine Learning, but the decision-making power of the AI is usually the starting point, rather than one arrived at via trial and error.

What is the difference between AI and Machine Learning?

Suppose we need a machine to count layers in ice cores and we want it to deal intelligently with the challenge of borderline calls. Is the faint change in colour a genuinely new layer? Or a subtle aberration in the current layer? The decision is obviously important to scientists wanting very accurate chronological data from the ice.

There are two approaches to creating this machine. The AI approach is to program the machine with the skills of a human expert. The human expert would assist in the creation of algorithms to address all the difficult calls and the explanation of why the expert reaches certain decisions would be used in the design. The strength of the AI would therefore be dependent on the skills of the expert.
The other approach would be the Machine Learning method. Using existing ice-cores that have been securely dated, the machine would have no decision-making tools, but it would try and try again. Each time it makes an error, the machine's criteria for identifying a new year in the ice are adjusted appropriately and the iteration is run again. By the time the machine can derive flawless year counts in several ice-cores, its users will have a lot of confidence in presenting it with a previously uncounted ice-core.

Chatbots, Natural Language Processing, Machine Learning and AI

All three of these concepts come together in the world of chatbots, because the chatbot is software that responds to human language and tries to do so intelligently. Typically, unless the conversation is limited to pre-defined responses (buttons) chatbots need Natural Language Processing. Then, if the chatbot is to become more accurate over time, it will need a feedback mechanism to allow for Machine Learning. As for AI, that comes with the NLP. The AI is the below-the-surface algorithm and

coding that allows the chatbot to use examples it has been trained against to guess at the meaning of sentences it has not seen before.

Let's take an example. A college deploys a chatbot to assist with career guidance. The chatbot has to correctly understand user intentions around the type work the student is interested in. So the college IT team build ten quick and easy *NLP models*, with just a hundred samples in each to get started, in order to pick up on the different possibilities: medical; technology; financia; education; technical; business services; sales; consulting; engineering; middle management. They find that a week after launch, the bot is 92% successful in its role.

No knowledge of the actual college courses or expertise in career guidance would be needed to improve the chatbot, instead, someone – without needing any coding skills – would monitor the interactions and make additions to the NLP models in the light of instances where the conversation did not lead to the appropriate information being supplied to the student. The college wouldn't have to do anything more sophisticated than implement this 'supervised machine learning' to soon have a near-perfect success rate. And it is worth noting that the process of analyzing 'failed' conversations can be automated, as can the process of adjusting the chatbot, creating a more genuine case of Machine Learning.

Let's suppose the chatbot has been created for a much more open purpose, to provide advice to researchers utilizing a large, complex archive. Here, a much bigger investment in an AI approach would make more sense. Not only will the chatbot need a large vocabulary and knowledge base, say a hundred specialised NLP models, but also the decision-making process for the chatbot (e.g. whether to refer the client to one archive collection or another) will have to be informed by the experience and knowledge of a human expert. Instead of handling routine queries, the archive chatbot is discussing in some depth the goals of the researcher and trying to match them to the appropriate archive. This is a challenge that can be met, but it requires much more input from humans at the beginning and improving the outcomes for such a bot will be much harder to automate. Analysis of where the archive bot goes wrong will be much more focused on understanding the language and meaning of the human responses than with the narrower type of role, where the bot has a more simple task.
We explain in detail in Part 2, how to create NLP models for your chatbot and then train them to improve performance. Here, I'm just giving an overview and making the point that you should aspire to make smart bots, capable of giving the user an experience beyond a set script. We've reached the

point that AI, NLP and Machine Learning technology is accessible to everyone. Behind the scenes, of course, there is some serious coding going on. Fortunately, as bot builders, all we need to do is plan how to make good use of it.

Let's suppose you have a chatbot ready and it has a particular branch of conversation created for a person who indicates an interest in going to the moon. The practical step that connects your script to the power of these recent technologies will be taken by your NLP model. At every stage at which you want the chatbot to have the option of moving the conversation to the moon branch, this model will be monitoring the user responses. If it is triggered as 'true' by the person saying perhaps, 'I want to be an astronaut'. Then the chatbot diverts the conversation into your moon travel branch beginning, perhaps, with the bot seeking confirmation that its interpretation of the last input is correct. The resulting conversation might look like this:

Chatbot: 'What would you like to do?'
User: 'I want to be an astronaut.'
Chatbot: 'I think you would like to go to the moon. Is that correct?'
User: 'Yes.'
Chatbot: 'Great, well I can help you with that. Please choose from the following options:

Button 1: Learn Astronomy
Button 2: Build a rocket
Button 3: Practice being weightless

Etc.

The crucial issue is that the moon-related NLP model is being applied to the relevant steps of the conversation and here the bot picked up the connection between the sentence, 'I want to be an astronaut' and the intention of going to the moon. Different chatbot platforms have different ways of connecting an NLP model to the chatbot. That isn't the smart part of the desgin here. What makes the bot seem intelligent is the success of the model. So let's consider that issue more closely.
At some point, to have your bot carry out this kind of conversation, you will need to design an NLP model for detecting the intention of the user to go to the moon. Here again, don't be put off by the challenge. We have a beautiful interface that allows you to create very effective models; we demonstrate it in Part 2. The main challenge in making a good NLP model is simple: providing it with a lot of examples.
Depending on the interface tools, you might train the model with a list of TRUE sentences like these:

I want to go to the moon.
Lunar travel would be awesome.
I wish I could visit the Sea of Tranquility.
Etc.

And plenty of FALSE sentences that are similar but have a different intent.

The moon is too far away for me.
I don't want to go to the moon.
Space flight is too dangerous.
Etc.

It is easy to illustrate NLP model training with the following example. Imagine you have a list of sentences in a foreign language and you don't know the meaning of these texts. Each sentence is marked as true or false and your job is to assign a similar tag to a new sentence which hasn't been marked before. If you have only a set of positive examples it is hard to invent a rule as to which samples should be assigned to a negative tag and why. At the same time, when we have a few positive and a few negative samples we can generate a hypothesis about rules that lead to the distribution of the sentence to positive and negative.

For example, if a model has ‘hello, Daisy’ and ‘hi, Daisy’ as positive samples it is hard to say what is distinctive about them without knowing the meaning. If there is a negative sample ‘Bye’ we might assume that the rule for positive results is that sentences should have the word ‘Daisy’ inside. But by adding a new negative sample, ‘Bye, Daisy’, we can see the need to give up on this idea and refine the criteria for recognition and so on.

Even just a few hundred examples would probably cover the vast majority of the ways in which someone would express a desire to go to the moon. Some NLP models have hundreds of thousands of sentences for their data set. And such models can be as accurate as a human in detecting the entity or intent they have been created for. Note that because language is fertile and evolving and because words have multiple meanings, no human even, let alone software, will ever achieve a hundred percent accuracy in understanding a user’s input.

So, with plenty of example sentences for its training the NLP model will be effective. This doesn’t yet mean you have applied AI or Machine Learning. These features come into play when the chatbot attempts to extrapolate from its training data to a sentence it hasn’t encountered.
Suppose the NLP model we are discussing has been trained to recognise ‘I want to go to the moon’ as true, will it also recognise, ‘I want to fly to the moon’ as true? Over time, surely it will, because it can be constantly retrained and will accumulate a dataset of all related sentences. But ideally, you want the bot to get this right first time. Will it? Here, to us humans, the similarity of the sentences seems very obvious. This is not necessarily the case for the chatbot. What will matter is the AI engine and the algorithm which analyses the sentence and whether it will recognise the intent in both to be the same. The chatbot’s ability to understand a new sentence is where the real cutting edge of this technology lies and is where AI comes in to chatbot creation. In other words, chatbots that simply follow a pre-determined conversation, where the user cannot enter words freely (or if they do, get the same limited set of responses), are not driven by AI.

In broad strokes, then, your NLP model is the practical tool that harnesses the AI system and it is a tool which can become more precise via Machine Learning and constant training. Using these features is key to building a really sophisticated bot with a powerful and engaging character.
And already, such bots are transforming a number of verticals. Next, we shall turn to some of the ways in which chatbots are proving their worth.

Chapter 5: The Best Customer Service Chatbots: Use Cases and Examples

The pace of business change is only getting faster as the pressure to streamline processes, economise and offer customers better service all compete for your time and investment. Leading the way into the digital business era is the customer service chatbot, an increasingly common feature on websites, apps and social media to help users and drive engagement.

IT is Saving Businesses From Extinction

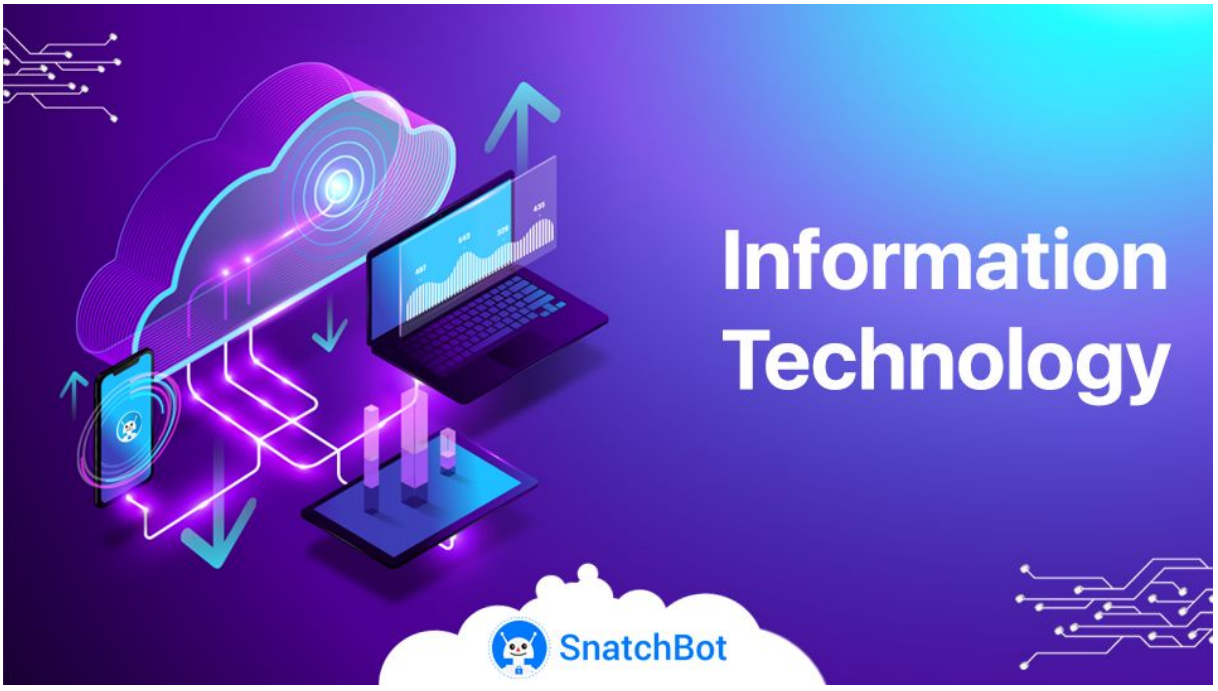
In 2019, business leaders, economists and pundits are so immersed in the triple-threat perils of Trumpism, Brexit and the Chinese slowdown that they fail to consider the wider picture. The world is due for a pause in growth if not the crash of a recession. At that point, every business will become fixated on survival and conservation through cost savings, redundancies and adapting the use IT to improve how they work.

During the 2008 crash and the years that followed, IT-based savings were essential for the survival of many businesses, as they dumped legacy infrastructure and high-cost tools for cloud and common off-the-shelf (COTS) technology, with a push to mobile-based working. And we can expect another round of similar activity come the first waves of economic purse-tightening during the next downturn.

While cloud and mobile were saviours over a decade ago, the next recession will see rapid investment and growth in AI-based services and the move to bot-based interactions with machine-to-machine services removing human interaction from many tasks, while business leaders, analysts and consumers become increasingly reliant on instant, smart digital advice.
With the global economic landscape looking increasingly chaotic, all types and sizes of company are acting now to reduce their cost base and prepare for the ‘AI future’, ‘digital business era’, or whatever you want to call it.

Already, forward thinking and innovative businesses have been through several generations of chatbot, starting with script-based chatbot development that augmented traditional reception desk or call center tasks. Then came the first generation of AI improvements such as natural language understanding and natural language processing. Now, we see the first commercial bots with access to deep AI that can process complex queries, understand and analyse the emotion within a conversation and much more.

Whatever level of bot a business needs, there are plenty of services on the market, but the business will need to ensure the bot meets the needs of the customer and the its own goals to make implementation of chatbots a success.



The Basics of Chatbot Success

The maths is simple, call centers cost money and the efficiencies of scale have long since bottomed out, making them less attractive wherever they are based. Having staff tied up in customer service calls or dealing with simple queries is also time-consuming and inefficient.

Which is why the chatbot has taken off greatly in the last couple of years, with approaching a million using Facebook Messenger to provide customers of all types of business with a 24/7 presence and fast answers to deal with queries order pizza, book flights or health appointments and many other tasks.

Over those generations and improvements by developers, chatbots have rapidly moved from technological curios to providing a valuable service. They've seen a big improvement in utility and a reduction in errors, helping drive increased customer engagement and increasing levels of user satisfaction. Meeting customers where they are also makes people more likely to accept bots.
As with any technology, bots for customer service are not an easy fix (although they are easier to deploy and lower-cost than many other options) they require time to develop, understanding of the technology and how it can benefit a business. In the rest of this chapter, I'll look at how they can help improve the services that a business provides, and highlight examples that can serve as a basis for your own projects.

How To Improve Customer Service With Chatbots

The key universal benefits of chatbots and AI or virtual agents are 24/7 accessibility, instant response to queries, the ability to escalate important or complex tasks to a person with the added bonuses of easy data capture, instant dashboard metrics and the opportunity to upsell or query customers.

Whatever the focus of a business, any company that deals with a growing number of customers invests time and effort in customer relations, services and retention. Banks or airlines with millions of customers do so on a massive scale, while utility providers fight an endless battle to keep usually grumpy customers happy, or happy enough to prevent them switching.

At smaller scales, medical practices and car workshops are replacing receptionist tasks with chatbots. Restaurants, bars and coffee shops are moving to digital ordering through apps or bots, while startups of all types can use a bot to handle reception and other tasks, when they lack the staff or funding in place for such roles.

Any business can develop a chatbot, using either existing scripts or coming up with a series of questions that address the company's key pain points. And the arrival of a bot doesn't mean the company has to slash staff, most bots enable workers to focus on key high-value tasks, only dealing with customers when the chatbot promotes a query that it recognises as urgent or important to a staff or team member.

The Best AI Chatbots Improve Your Customer Service

When it comes to the speed and convenience offered by automating customer service systems, there are a range of AI, voice and virtual assistant, and chatbot vendors on the market. Most are provided as cloud service with on-premises options, charged at cloud subscriptions rates, while some offer free basic versions with extra services charged for.

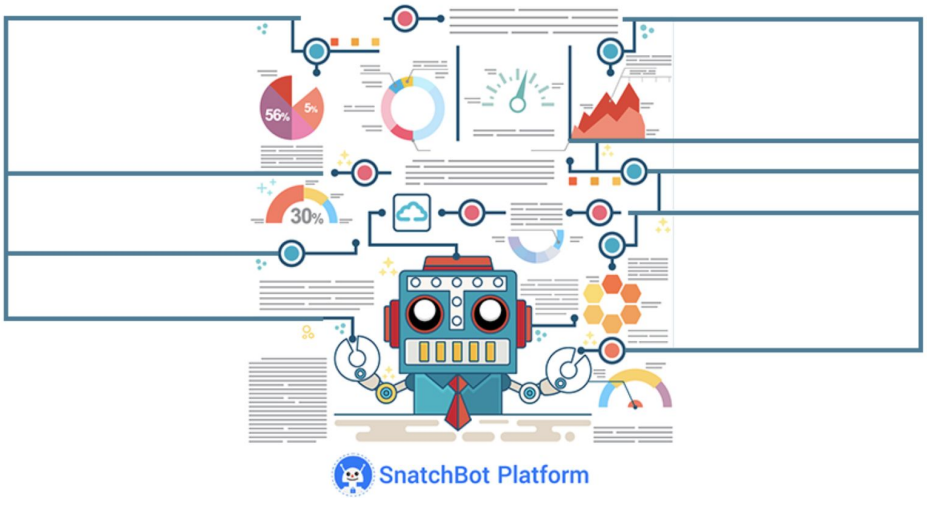
The bigger names include Amazon, IBM with its troubled Watson AI, and Google, with its many cloud and help services. Microsoft has refocusing, having recently reconsidered its Cortana voice assistant plans. Salesforce and other business tool vendors have their own bots, making for a highly competitive landscape.

The big names would all love to ensnare you in their ecosystem and upsell other services, and there are questions over transparency about AI data and black boxes being stored in their clouds. All of which might have a company happy with an Office or Email suite wondering how suitable the giants are for all their business needs.

Specialist vendors offer a more focused service, usually purely focused on delivering a chatbot that can be integrated into a website, app or on social media to help improve the company's presence and efficiency for customer engagement.

SnatchBot, for example, the platform my agency uses to make chatbots, offers fully functional chatbot for free using SnatchBot, featuring multiple-language support, NLP (with proprietorial AI), templates and an easy-to-use interface with no coding skills required.

Many other bot-building services are available all the way up to IBM and Salesforce tools, but chatbots remain one technology that is surprisingly accessible to any business.



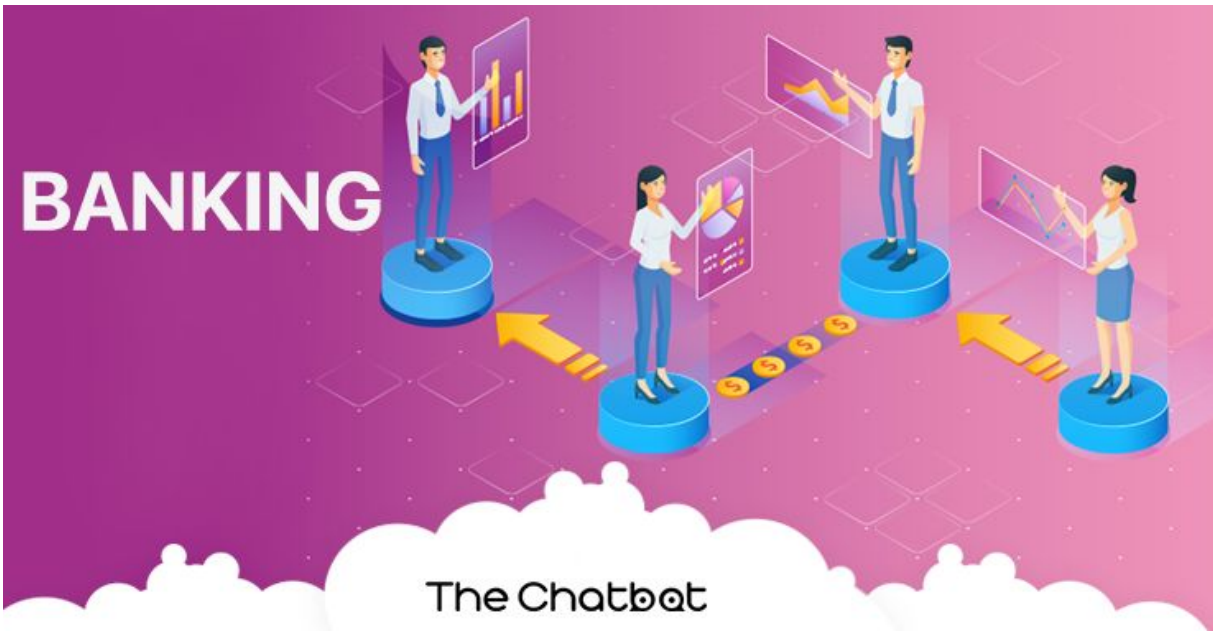
Customer service in banking

'All banking leaders understand how a perfect customer service would give them a competitive advantage and that's why they turn to Chatbots.'

– Avi Ben Ezra, Chief Technology Officer of SnatchBot

In Hong Kong, HSBC Bank has Amy, a bot uses AI to operate in both English and Chinese, and has an embedded customer feedback feature, allowing her to learn and improve her knowledge over time to deal with wider queries. Note the clarity of use case and notifications about privacy and data collection on the front page.

The AI through learning will make fewer mistakes or errors than a human, which is essential for banking communications and can increase customer engagement by projecting a personality — friendly, warm, reliable — appropriate to the bank.



Are Chatbots ruling customer service?

With all this technology this is some concern that chatbots may damage customer service values, or turn people away from businesses that use them. With tens of thousands of businesses launching bots and users getting more and more used to them, that concern seems to be overblown. While bots may generate outsized headlines when they go wrong, their rapid adoption has seen a boost for customer services in huge numbers of use cases.

Take Rose, the chatbot and digital concierge at the The Cosmopolitan Hotel in Las Vegas. Launched in 2017, she is doing great service for the hotel, and meeting huge numbers of customer needs without stressing out the staff. She provides high levels of engagement and success, helping drive revenue and customer satisfaction. Rose is evolving to help do more for customers, and is one of the leading examples of a smart bot making customers as well as the business happier.

One problem that some businesses have is they roll out their chatbot as the minimum viable product (MVP), the bare bones they need to get the bot started. That is likely not good enough for most customers, and the business needs to look to adding more customer services benefits rather than the kudos of having a chatbot up and running, especially if it underperforms on launch.

The main issue for any business is that they need to:

- Prepare customers for the arrival of the bot and prepare the ground for its launch;
- Provide a clear list of expectations about what the bot can and cannot do;
- Monitor results and feedback, and update the bot to improve performance.

Preparation includes a FAQ in places where the bot will appear, highlighting what technology it uses, how people are supposed to interact with it, and how it secures and protects privacy. Expectations highlight what the bot can do, from taking bookings or providing information. And perhaps a plan of what features will be added in future to create interest in the bot.

Finally, when launched, project leaders need to ensure the bot meets those expectations, is delivering a very high level of success and satisfaction, and fix problems that are weighing down on success by checking the logs regularly, analysing interactions and improving NLP models.

At the start, as with online chat and other customer service initiatives, many people may be concerned about artificial intelligence driving the customer experience, but the technology is fast becoming a part of consumer culture and accepted as the norm across huge areas of business.

From airlines to fast food, banks to auto firms, the growth in bots continues, with many brands using bots as the voice of their brand in new and interesting ways like fashion label Ted Baker and Amtrak's Julie who sits proudly on the company's website top bar and has saved the company millions of dollars and travellers huge amounts of time. Brands already have a strong sense of identity, making developing their chatbot easier. For those starting out on brand building they need to:

- Ensure the bot is fun and engaging, with active opportunities for all types of engagement.
- With that in mind, avoid being rude or overly-familiar.
- Be consistent: don't say one thing to one person and then change that message for another.
- Use the right tone of voice - however hip or professional the brand, remain polite.
- Don't be afraid to say 'sorry' over a mistake, however small.

With brands big and small relying on bots, there are plenty of great and some not-so-great examples in plain sight to base your efforts on.

AI Chatbots and Virtual Agents are the future of customer service

Whatever the initial skepticism and pushback against bots, they are already popping up across huge numbers of business, marking the future of customer service. As the technology starts to mix with virtual agents and virtual assistants, the term chatbot might not be around for too much longer, as more adopt voice (in most common languages, via the power of AI) as a way of communication.

That will help them work in virtual assistant environments like Siri, Alexa and other places, including front of house kiosks or office reception. Text won't vanish completely, as privacy and environmental considerations mean people will sometimes need to or will prefer to use a keyboard, either on their phone or at the desk.

Also, chatbots will borrow features from virtual assistants, like the ability to auto-order consumables or turn the lights on for when you get home. These benefits as part of a customer service package will appeal to any service-focused business that wants their bot to offer that little bit extra.
AI bots and their back-end tools will also be able to access customer records, sales history and other information to find topics of value and use to them. They might help the business reel in new prospects, renew subscriptions and more.

As chatbot technology gets smarter, and they become more widely seen, bots can pop up as part of online adverts that people click on to start a meaningful conversation straight away. People will see

them on streets and shopping malls, offering to help them find products in stock, or to preorder items, while airports and other transit centres will soon see kiosks take over from the massive queues at a customer reception desk.

People will be able to use a bot on any device (as brands continue to push smart technology in kitchen appliances, cars and other areas). And, as businesses adopt other new digital concepts like blockchain and cryptocurrency will find bots making it easier for customers to understand and make transactions from the easy-to-follow guide of a bot rather than leaving consumers at the mercy of private keys, encryption codes and digital wallets.

And, as adoption increases, people will be more willing to use them in wider circumstances, helping healthcare brands and medical facilities as the first line of enquiry and initial triage. Whatever the bot, the more sensitive its nature, the greater degree of care required during announcement or launch.

Take for example the Babylon Health Bot that was launched with the claim it could beat real medical professionals at diagnosis. Whatever its benefits, antagonizing the medical profession was never a good idea and a backlash against the quality of information and advice it provided soon followed. With most companies now offering a web or app for customers and consumers, the chatbot is just the next part of that digital evolution. As commerce and customer services changes, in the near future all businesses will focus chatbots to make communications and processes easier, add a smiling, always-available face for customers to turn to.

While most companies will need to maintain human customer support for complex issues, as the bots get smarter, over time that need will recede, and within a decade the human touch could be a thing of the past for a huge majority of interactions.

AI and Chatbots will show all businesses the way forward for customer service

Both in terms of numbers of bots and technology evolution, chatbots are on a clear trajectory to benefit business and improve customer satisfaction. While NLP and other steps are improving the basic processes that bots use. Full-power AI can rewrite the rule book for what bots are capable of. We see some chatbots already fielding millions of interactions a day in China and India, with their huge customer bases. AIs using the power of big data analysis can monitor that massive number of conversations and link common threads together, driving responses toward the best or most useful answer and providing a better service.

With so many strong showings from bots around the world, we are already well past the point of worrying if a bot will upset a small percentage of users. The savings to the business and the value to the majority of users is already proven and growing.

Chapter 6: Chatbots Put the Smile into E-Commerce

There is a trend on many e-commerce websites that is both chilling and exciting. The arrival of a pop-up chatbot enquiring if it can help marks a major design change. This is a serious move for many websites, with a popular but often unproven avatar willing to do your company's business. Chatbots also appear on mobile apps, Facebook Messenger and other social media platforms, making it the current poster child for customer feedback and interaction.

For companies without a chatbot, they must be wondering, do we need one? How do we get one? And, will it help their business? With a technology as young as chatbots, finding the answers can be hard, few e-commerce stores will give away their retail and performance data, but most seem pleased with the early progress.

E-Commerce Bots come in many forms. Fynd's Fify or Shopify Messenger help make shopping in product-heavy stores simpler. China's WeChat offers a plethora of services, from ordering pizza to hailing a cab. Some chatbots are narrow-focused and work on knowledge gleaned during the current conversation, but soon most chatbots will have access to a customer's full history and many parts of the business data stream to help improve their service. Despite early customer nervousness, it won't be long before bots are trusted to represent brands, both global and local, as they learn about shopper needs. Customers will then be happy to link their wallets to bot-enabled transactions, for a frictionless, complete customer journey and experience. That should help customers come to trust them as just another part of the technology that surrounds us.

Chat from the e-commerce perspective

The key reasons for deploying chatbots include helping a company reduce costs, automating processes and providing faster, more modern shopping experiences, especially as chatbots learn what customers like. Chatbots can also help increase the range and breadth of digital customer engagement, providing multiple services in one place. As people swap from social media to websites to apps, it makes sense for the same bot experience to follow them. Chatbots also allow a company to tailor its branding messages much more effectively than a static website.

The character of the company - dependable, cheerful, witty, sombre, etc - can be built into the chatbot's style of communication. Nuance will be key to the success of bots, especially for fashion and holiday shoppers. Being able to understand sizing, color or pattern compatibility, or what makes a good family holiday vs. a romantic weekend, and expressing those sentiments naturally are all part of the challenge of this growing technology.

Perhaps the ultimate end of the bot is as a concierge service handling multiple needs in one conversation. Bots can also act as a partial alternative to call-center agents dealing with shopper queries. Or, as a total help solution if the company, typically a startup, lacks the resources for traditional customer support, but only as a temporary measure. At best, a chatbot should be able to hand off to a person and let them know real-world help is on the way, when it has run out of options.

The Customer is Always Right

The key focal point is the customer. They need to be aware of what chatbots offer, that they are talking to a machine, to understand and appreciate the benefits, and to feel that it helps or rewards them in some way. In e-commerce, chatbots can help customers find the product they are after, can direct a user to the correct support information, and even take orders and payments for fast food deliveries. But this is only the beginning, a chatbot with awareness can remind customers when it is time to buy consumables, or to enquire about customer satisfaction.

Customers need to be educated about this, which is tough if that first point of interaction is a blunt, 'Can we chat?' message on a screen. In whatever market, the key trait of any good chatbot will be to meet the needs of the customer. If a chatbot doesn't know the answer, a boilerplate 'I can't help message' will not be acceptable. When the bot is starting to struggle, then human help may be needed, which is why no company should rely on an all-bot solution, at least not yet.

Developers keeping pace with demand

From the developer's side, SnatchBot's Avi Ben Ezra believes, 'the point is that humans seem to like the interaction more than just browsing websites. If a site is going to have a large chatbot attraction splashed across its home page, then there had better be some value or entertainment to make it worthwhile engaging with.' He could be right, looking at UK brand Unilever for example. their PG TIps beverage advertising puppet monkey managed to raise over $385,000 for charity thanks to the creation of a mirthladen chatbot on Facebook Messenger. For brands, putting a smile on a customer's face will be a key part of getting them engaged with bots in the future.

Are bots about to send email marketing to the Trash folder?

Email is among the highest performing marketing channels. It regularly outpaces other mediums, with research showing that email drives customer acquisitions at a rate 40 times higher than Facebook and Twitter combined. Email also ranks near the tip-top for ROI in marketing. Global brands appreciate and understand its effectiveness.

There are numerous similarities between Facebook Messenger chatbots and email. They are both highly targeted, direct forms of promotion. Whereas traditional ad mediums like billboards and TV seek to reach the widest possible audience, email and Messenger send a specific message to pre-selected and segmented consumers. Also, both seek to not just bring awareness to a product or service, but also to link the consumer to where they can make a purchase or complete the sender's desired outcome.

With these similarities, the question arises: do Facebook Messenger chatbots provide a superior alternative to email marketing?

In order to overtake email, Messenger bots must first identify either a deficiency in email marketing, a

clear superiority in it's own platform, or both. If a brand has seen consistently strong results from email marketing, why move away?

The following factors help answer that question:

- Platform functionalities
- User demographics
- Intimacy of the mediums
- Existing marketing and technological infrastructure
- Deliverability

Platform functionalities: What they can and can't do

To compare Messenger bots and email, I'll first examine the technological capabilities and features of each medium. Why? Because the advancements in chatbots are what makes this comparison possible. While bots and email seek to accomplish many of the same goals, they do so through different structures and features. Whereas emails present all content at once, chatbots would likely start with a proposition, update, or question. From there, the information the customer receives will vary based on their inputs and interactions. Think of email as a speech, and a Messenger chatbot as an interview. Like a speech, email is a one-way communication, with all of the information being presented in one continuous sequence. Messenger is comparable to an interview in that it exists as a series of back-and-forths with one side attempting to gather information (the bot), and the other (the human) providing that information based on the questions asked.

Email consists of a single, vertical layout of content. Emails can contain multiple images, lines of copy, and links. Emails can also present a variety of messages and CTAs within one communication. Size constraints, however, limit the capability of email to send larger, more engaging content such as video and audio. Also, recipients rarely complete a desired action within the email itself. Rather, the email compels the user to do something and links them to where they can do it.

Messenger chatbots, on the other hand, are built for a smaller amount of content. Imagine putting all of the content from an email newsletter into a Messenger chatbot. It would be enormous, nearly impossible, to scroll coherently through and an utterly awful user experience. A practical application of Messenger would break content down into small, easily digestible bits. The content, order, and number of these bits is determined by how the recipient interacts with the bot.

Facebook Messenger also differentiates itself from email by allowing most desired actions to be completed within the message. Without leaving the platform, users can: fill out polls; provide information; watch videos; listen to audio and, most importantly, make purchases. Chatbot platform SnatchBot provides great examples here. Theoretically, the fewer steps required for the user to reach the desired outcome, the more likely that desired outcome is to be reached. By aggregating the marketing message and it's actionability into one place, Messenger makes itself a much more appealing platform than traditional email.

Emails vs Chatbots: an example

To gain a better understanding of how the two mediums compare, let's examine a practical application. In this case, a reminder from a car company that your vehicle is due for a service.

Email
An email is sent that informs the customer that their car is due for a service. A CTA links to a web page in a browser where the recipient can select their dealership and see available dates. A date is selected, booked and an email confirming the appointment is sent.

Messenger chatbot
A message is sent that informs the customer that their car is due for a service. It asks the recipient a date and time for which they are available and sends appointment times based on the customer's inputs. The customer selects the one they want (either through a quick-reply or text input) and the bot confirms the booking. The bot also configures to send a reminder message a day prior to the appointment. Ultimately, Messenger is appealing to marketers because it provides the direct contact and accuracy of email without any of the content or actionability limitations. Bots can provide a richer, more interactive experience, and therefore become desirable. The challenge lies in identifying how Messenger features are beneficial to your customers and incorporating them into your message.

Demographics: Who is using what?

The age of the communication target is an important pillar in comparing Messenger chatbots to email. Young users are increasingly flocking to messaging apps over email, with users age 13 - 24 spending 3.5 more time in messaging apps than those over 45. As time goes on, these users will rely less on traditional email platforms than the generation before them. This gap presents an opportunity for brands to target younger groups within messaging platforms. Older users, on the other hand, show no sign of abandoning email. They are resistant to using their mobile device as a primary tool, as evidenced by the fact that 55% of 56 - 67 year olds will never use mobile first to check their emails.

A resistance to mobile adoption presents a challenge to mobile-first messaging platforms. One of the most significant impacts of age difference lies in the ingrained expectations that come from experience with instant messaging and email. Older users are accustomed to receiving promotional emails. These types of messages have existed for nearly as long as email itself. On the other hand, they are unlikely to have received much promotional outreach from brands through Facebook Messenger. Introducing promotions through Messenger is a break from what they have come to expect. The immediate thought is that they will have a negative reaction to this: customers have rarely been thrilled by the introduction of promotional content to previously ad-free spaces.

While older users seem more set in their ways, brands still have the opportunity to shape the expectations of younger users. The Messenger platform is constantly making drastic changes, opening the door to introducing promotional messaging.
If movement is timely and the messages properly crafted, advertisers should be able to leverage the Messenger platform as an effective method of promotions with younger users.

Intimacy of the mediums

Among the main reasons for using Messenger chatbots as a marketing medium is, 'reaching consumers where they live'. As users spend more and more time in messaging apps, brands seek to create a presence there. If you're going to be, 'reaching consumers where they live', you had better make sure you knock first.

Both email and Messenger require that consumers first indicate that they are interested in receiving promotional messages before a brand can send them. Messenger chatbots cannot broadcast messages to profiles that have not already interacted with that bot. Ultimately, this is a good thing for both mediums. The more consumers are spammed, the less likely they are to open real, quality

messages. Tight rules keep the ecosystem clean ensuring that it remains viable for both users and advertisers.

Additionally, Messenger is seen as a much more private, protected place than email. For years, Messenger users have interacted only with other people, and mostly those who they know quite well. On the other side, promotional emails are well established. Consumers are used to this and have the expectation that receiving those messages is simply a part of the medium.

These customer expectations represent a hurdle for branded Messenger chatbots. Messenger inboxes are personal places. That means that these bots must provide something truly beneficial to the user. Likely, this would involve leveraging the unique capabilities of Messenger. Simply jamming the same message from an email into Messenger is not enough. This would be viewed as another advertiser invasion, sacrificing the user's' experience for profit.

How can chatbots clear this hurdle?

Messenger requires that broadcast recipients must first interact with that bot. So, their first experience will most likely not be an email-type message. Rather, it will be activated by however they stumble upon the bot.

This could be:

- A branded Facebook post explaining and encouraging interaction with the bot.
- A social or banner ad linking to the bot.
- An email that explains the bot, it's benefits and links to it.

As such, first impressions are critical. Within that initial interaction, the chatbot must entertain the user to the point that they opt-in to continuing to receive communications through that medium.

What's in place: Existing marketing and technological infrastructure

Email marketing is deeply ingrained in the strategies of many businesses, and will likely grow. In 2017, 58% of marketers increased email spend, while only 7.5% decreased it. This establishes two main challenges for the uptake of bots:

1) Integrating with current technological and marketing infrastructure

A major benefit of email marketing lies in the email address itself. It is generally provided to the company in situations ranging from a car tune-up to buying shoes. From there, it is input to databases where the business can analyze that customer's behaviors and purchases. Welcome emails can be sent based on purchases and retention emails delivered when that customer is approaching the time when another purchase should be made.

Have you ever bought something, and while paying, had the cashier ask you for your Facebook profile? Most likely you have not (unless they're looking for a date). Luckily, e-commerce provides the opportunity get around this and start linking Facebook profiles to purchases. When consumers buy something online, the site usually requests an email address, to which a purchase confirmation and receipt are sent. If this email address was replaced with Facebook, the same post-purchase information could be sent through Messenger.

This would:

- Initiate customers to the concept of communicating with brands through Messenger.
- Introduce them to chatbots (if not already familiar).
- Open the possibility of the customer subscribing to further bot communications.

While this would accomplish those bot-specific needs, it would provide the added benefit of accessing the customer's Facebook profile for increased data collection and analysis.

2) Swaying brands from a medium that's working.

As mentioned throughout this post, email is an extremely successful marketing channel for businesses of all sizes. It therefore becomes more challenging to move brands to a new medium. The solution to this issue likely lies in persuading brands that email and bots are not mutually exclusive. Simply, each has its own specialties. Also, many products have customers across all ages. Going all-in on Messenger would exclude older customers, while relying solely on email means missing out on younger, growing audiences.

Deliverability

Roughly 99% of marketing emails are delivered. Alongside bots, email is among the most effective ways to ensure customers receive a message. While deliverability generally deals with the percentage of emails that successfully reach the correct inbox, there are additional factors to be considered when comparing email and Messenger chatbots.

The nature of the inbox

Messenger and email receive and store messages in very different ways. Each email is treated as its own entity, and kept separate with a distinct subject line. Some providers such as Gmail go so far as to classify messages into separate folders such as Promotions and Social.

With Messenger, all messages from a sender are kept in one, continuous conversation. This means that sending a new message will bump your previous conversations further up the screen. If you send too frequently, some messages will end up pushed to a place where they are unlikely to be read. Also, bot conversations change in appearance as the consumer proceeds through them. For example, once

a Quick Reply is selected, the other options are no longer displayed. Bot builders need to understand this, and adjust to the entirety of their messaging existing in one place.

Consistency of appearance

The appearance of an email is affected by email domain (Gmail, yahoo, etc.), device brand and operating system (Apple, Android, etc.), and platform (web browser, desktop app, mobile app, etc.). With so many possible combinations of domain, brand/OS, and platform, there's a near infinite amount of outcomes.

As a result, coding and testing an email so that it displays perfectly across all combinations is one of the most expensive and time consuming aspects of email marketing. But, should you choose to skip this step, it's likely that images, layout, and links may break when a recipient opens the email on a setup different than yours.

Messenger is the clear winner over email in consistency. Despite slight differences, Messenger functions nearly identically across platforms. What you see on your desktop is virtually the same thing you would see on your mobile device. This eliminates the time and money email requires to get to market, while also ensuring that the message appears exactly as it is intended.

Takeaways

At the end of the day, Messenger chatbots and email should be judged for their merits based on how they match up with your brand's needs. Your product, target market and existing strategies and infrastructure will determine your uptake and usage of either medium.

Ultimately, it would be a rare case that a brand should go 100% Messenger, or 100% email. Each has its own advantages and disadvantages and can even be upgraded by having the two work in conjunction. After all, marketing is at its best when it's unified.

At the very least brands should evaluate and test how Messenger chatbots can take the stress off of their email plan open up new doors to customer acquisition and retention.
The early bird gets the worm, so get out there and start shaking things up.

Chapter 7: Real Estate Chatbots - The Benefits of Artificial Intelligence for Realtors

The real estate industry is largely a keen early adopter of technology, from virtual and augmented reality walkthroughs of property helping expand the pool of potential buyers to interactive maps to help people find their ideal property in a new area or town. Chatbots and AI represent the next step, enabling home sellers and buyers to find information that matches their needs automatically, and reduce frustration for customers.

Estate agents and realtors are usually very busy professionals, arranging and attending viewings, writing up new listings, updating websites and constantly on the lookout for new properties. Even a well-staffed office will find itself moving toward automation, to free up estate agent time, while smaller branches can use bots when staffing is an issue.

Use of smartphones and business conducted through email and digital documents have improved the process across the search, selling and buying process, while real estate lead generation software is a tried and tested tool. And now, artificial intelligence in real estate is helping speed things up by providing advanced matching between buyers and properties. Chatbots can triage requests from visitors on the agent's website or social media, perform comparative market analysis and show keen buyers suitable or the latest properties to help provide a hook to a potential sale.

As the realtor funnel moves increasingly online, especially among younger buyers but also among the more mature movers, chatbots and AI will play an increasingly important part in starting the conversation and helping them move as the market for condos, homes, business property, buy-to-let and other types become a digital-first business.

As the speed of property sales increases and people need quicker answers at any time or in any time-zone, bots are becoming a key part of helping customers and improving the efficiency of the agent's business, while freeing up agents to do less spreadsheet shuffling and more valuable work.

The Chatbot as Agent

Chatbots are already well-known for helping provide a 24/7 service, seven days every week and through the holidays. As customer's circumstances change more dramatically, a chatbot can help answer questions like, 'how many four-bedroom houses do you have in Aberdeen' or 'I need a condo near Panama City Beach, Florida.' at three o'clock in the morning.

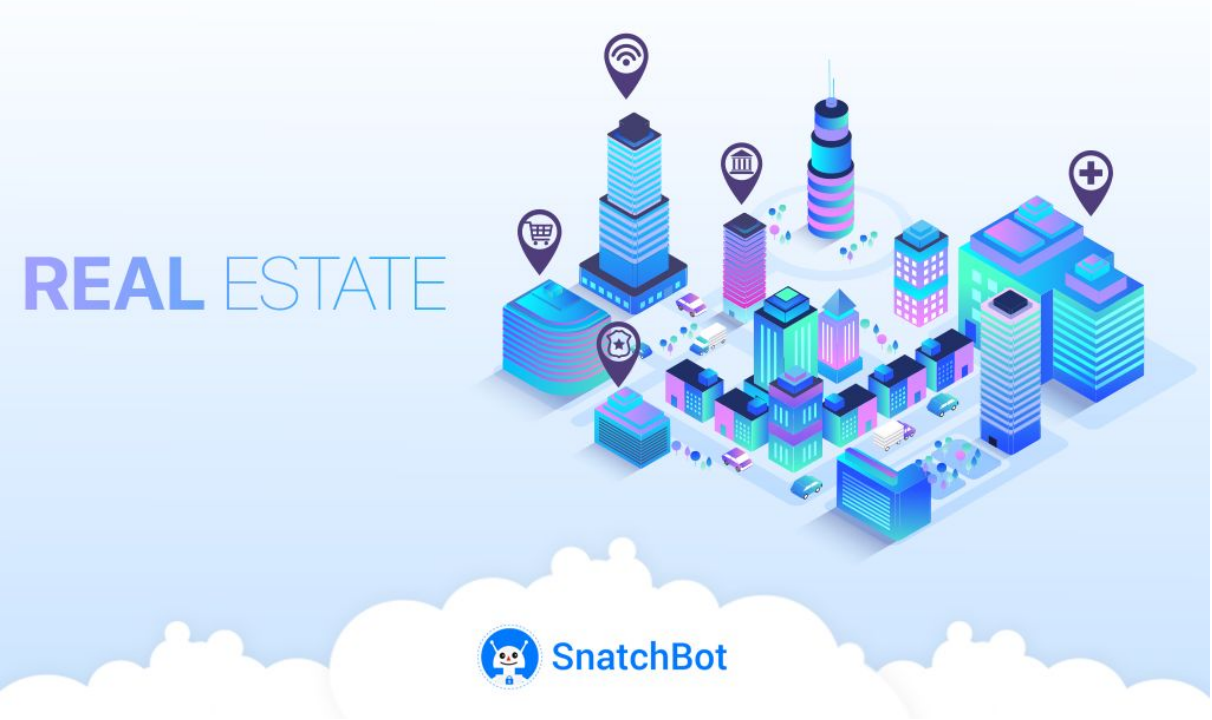
The bot can field questions from people who are just looking, and not worth taking up your time but can also direct those with immediate queries to a realtor who can provide greater detail. A good chatbot not only handles the customer, they can perform useful tasks like help schedule property viewing at convenient times for both parties, and making a good impression as part of the business. They provide a warm welcome, with as much chit-chat as needed, and then show properties by value, number of bedrooms or other criteria, all faster than a human, and just as quickly as a website, with more focused results.

Bots can add value to any query, showing some knowledge of a local neighbourhood, highlighting news stories about up and coming areas, providing related information such as school ratings and about amenities, while providing immediate access to an agent if it runs out of steam, or getting someone to call them back if everyone is busy or it is out of hours.

Modern bots can remember previous conversations with a customer, and help move the process along to grab their attention, gain their interest and help guide them to a decision, making the realtor's job easier. They allow agents to focus their time on the high-touch, high-value parts of any transaction

that need the human element, while customers can use them on their desktops or smartphones seamlessly, taking the conversation with them.

Bots can be used on Facebook Messenger and other social media to fit in with the customer's approach to using technology. Or, it can be deployed on the realtor's app or website, along with many other platforms depending on what they use, and working alongside other real estate agent tools. To assist sellers, a chatbot can provide a quick-and-easy home value bot to encourage people looking to move on. And, as the estate agent branch or company grows or scales up, it benefits the business by freeing up time and resources to focus on making key sales, and helping move the team and business leaders to transition to a digital-first organisation.



Chatbot tools for realtors

As with any high-value market, there is already a range of dedicated tools for the real estate sector, helping agents improve their performance through better sales tools, analytics and providing ways to deliver great customer service. Bots are just the latest, either from a specialist vendor or as part of a realtor software package that can include a range of AI services. These might include more accurate valuation tools that can automatically source and analyse data for home, local and regional property sizes, stock categories, road and services quality, and historical selling prices, saving many hours of traditional work per transaction.

AI can also help improve marketing campaigns, sending information on the ideal property, not just the close-to-their-specification ones, helping improve the chances of a sale and reducing the amount of drag in a sales or buying process. Bot design services like SnatchBot enable any agent to build their bespoke, ideal chatbot that can use AI features like natural language processing to understand the specific needs of the customer, and program it to understand, and explain, the jargon of the industry. These bots can operate on Facebook or other platforms, providing an instant understanding of engagement through advanced analytics. Estate agents can also link bots to databases and provide imagery and video in a chat to help highlight suitable properties.

The Imperative for realtors to adopt technology

Through upturns and downturns in local and global markets, real estate agents have handled the tough with the good, and usually come sailing through. That might lead them, and business leaders to assume that technology can't improve their situation much. Yet technology, social media and advanced services like chatbots have proven benefits. Those that are adopting them will do better than those sticking to the old methods. Take realtors using Facebook for lead generation, the growing ROI from chatbots and a world of AI services that are just around the corner.

What is essential is that estate agents understand and start using these technologies now, or risk being left behind and overtaken up more aggressive vendors. No matter how good the human customer service, except in some very niche cases, bots can help win deals and speed up sales.
If someone senior in your office is anti-technology, you need to explain that new technology does not alienate customers, but that mobile or computer technology is what pretty much everyone is using to do business. From doing grocery shopping, buying clothes, selling cars or buying homes and keeping in touch with family. Chatbots and AI are becoming part of that language, and wildly successful chatbots on Facebook Messenger and other platforms help every type of business from hotels to medical care providers, brands and stores reach new customers every hour.

Chapter 8: Chatbots in Education

One of the hot growth areas for chatbots, where serious levels of engagement is a key issue, is the education vertical. Growing numbers of students, both on campus and learning through remote teaching, see faculties, facilities and individual teachers pushed to answer an ever-rising number of questions.

The growth of chatbots has had an impact on most industries, but with its focus on the young and technology-accepting generations, colleges, schools and other institutions are at the forefront of brave developments to push the technology beyond traditional customer services. Bots are easy to build and update, provide instant feedback and can instantly help improve the quality of education while helping to free up finite staff and teaching resources.

Chatbots are one of the leading technologies for 2019 according to Campus Technology. And it is easy to see why: students are sometimes fragile, maybe moving away from home for the first time, put under a lot of peer pressure, and may be scared to talk to a course leader or professional, all of which puts bots in pole position to answer a lot of basic fresher-type information, detailed queries and to deal with some emotionally charged issues.

While education globally faces similar issues to business, it is also becoming an increasingly commercial proposition for universities and academies, requiring IT solutions to the growing number of problems they face. Also, rising nations seek to attract students from around the world, challenging older institutions to modernise, encouraging them to develop bots that play a key role when it comes to marketing and delivery of courses.

Educating your college chatbot

For example, The University of Adelaide uses a chatbot to ease the workload of busy staff during results time, to help those figuring out their placement plans. And globally, attracting new students has moved on from glossy brochures, open days and selling courses because relatives or distant ancestors studied there.

In 2019, students have the world's top colleges to pick from, cheap travel and the bravery to study abroad in growing numbers. With easy access to lifestyle and social data to find the best places to study and live, plus a deeper understanding of what courses offer, and how they are rated compared to previous generations, making that data accessible and promoting an institute can be tricky. To that end, more colleges provide bots to engage with prospects and prove they are capable of talking to students using their tech and platforms.

With most colleges increasingly businesslike in their approach, with large volumes of internal customers priorities are largely inward focused. Turning to bots helps provide marketing and initiation/onboarding facilities for all stakeholders. Bots can reduce the time it takes students to find courses, and make learning itself and student life easier. Georgia Tech's Pounce chatbot is one example where it helps students in their courses and has answered over 200,000 questions while reducing the challenge of 'summer melt' (people not taking up their course) by 22%.

Bots can also be used to provide course feedback and teaching-assistant style advice, as they become more familiar with courses, and more mundane queries like timekeeping, where lessons are being held, enrollment queries and so on. As a fast-evolving part of 'intelligent campus' projects, campus chatbots can help students through their smartphone or laptop, with class reminders, study notes and much more.

Teachers will also use bots in the classroom to help refine teaching practices. Using them as digital teaching assistants, freeing up time for teachers to handle important interactions with students. As we have witnessed in other business areas and markets, the bots handle the common everyday tasks, helping to make staff roles in education more impactful and protect roles rather than threaten jobs.

For remote courses, bots can also help provide information and even deliver tests to students anywhere in the world on their notebooks or devices. Helping provide instant results, and feedback on qualitative answers to help improve student knowledge. Teaching and revision bots can provide ad hoc tests, ping pupils with reminders of key facts or required reading. They could be used to help assist in preparing for tests, translations for language-based courses and encourage more interactive teaching.

Growth in Learning as a Service

A key trend in education is the move away from full-time courses to remote and self-learning, evening courses and other forms of training. Bots and other tools can help provide desktop-based learning with a greater degree of response and feedback compared to traditional distance and e-learning efforts.

Over 10 years, Khan Academy has moved from a one-man band to a global teaching house, providing free world-class education to anyone, anywhere. The likes of Udemy charges a small fee for specific knowledge-based IT, creative and other courses. These and others offer online learning on any device.

It is not only traditional colleges that can provide lessons. America's Planned Parenthood chatbot for sex education aims to spread the word of safe and responsible attitudes to sex at a time when the Republican Right is cutting back on funding for such efforts. Similarly, the Climate Council is offering advice to the young on environmental issues via its chatbot to raise awareness. As younger generations get used to lessons via bot, all types of church, charity and other types of institution can spread their word this way.

Bots could soon help deliver core syllabus lessons, offer quick learning bites or short refresher lessons to see what people remember from the main lectures. They could also help answer students' questions, leveraging previous answers, AI or deep research to find to the deeper questions that students might have.

Chatbot data can also be used in conjunction with dashboard features like sentiment analysis to study how much students learn from and enjoy their studies, helping to provide adjustments if the pupil or the subject matter aren't getting on at an individual level. Colleges have data that can be used to train bots, providing the basis for rapid deployment to social media or college sites and apps.

Bots can also support front office staff, helping them deal with common student queries. They can also help at-risk students by providing non-confrontational ways to get in touch and discuss mental health or other problems. Like this Irish SnatchBot-created bot that helps respond to personal queries.

Education is set for huge changes in the coming decade. Chatbots will play a key role in helping students choose courses and institutions. Helping market and run courses more efficiently and making them more accessible helps to reduce costs and increase the level of student success.

The rise of the class bot

Users of the SnatchBot platform responses show a narrow lead for the education sector above other verticals, highlighting bots importance to education. From enrollment to time-keeping, and teaching itself, chatbots can play a major part, but also offer so much more potential.
At Georgia Tech, Professor Ashok K. Goel uses bots in class to help refine teaching practices as digital teaching assistants. They free up time for the human tutors to handle more pressing matters. As we have seen in other markets, chatbots can take over some of the grunt work, making teaching more enjoyable, increasing the positive impact lecturers and staff have on pupils!

Looking forward, an ELearning Industry piece predicts tests moderated by chatbots will produce instant results and save on marking time. A French chatbot Pipplet is already helping students improve their English. Generally, teaching and revision bots will remind students of key facts or issues at timely intervals, to help aid revision, while aiding the transition from book-based to online learning. Also in the U.S., the *Chronicle of Higher Education* reports how A.I. Is infiltrating every corner of the campus. This shows that once bots start to appear, people will find new and innovative uses for them.

As education moves away from rote-based learning, the rise of learn-as-you-like is growing, especially among colleges and remote learning courses. Some current examples are highlighted by Tech Emergence, including foreign language tutoring.

At the basic level, most schools are seeing ever-rising numbers of pupils, growing classes, new subject areas and a growing volume and level of administration. Chatbots could help unify many of these systems, such as attendance, lunch menus/payments, school trips, absences and other issues, freeing the admin staff to focus on key issues and essential tasks.

As they become more universal for students, chatbots can also help monitor mental health. Intel's iQ bot is an early example. Many colleges are looking for better ways to help prevent self-harm, bullying and suicide, and bots using AI could be a major benefit of technology as they get to know students, and understand their emotional state through conversations. While bots will never replace parents, teaching and health professionals, being able to help trigger a silent alarm could prevent harm and save lives, which will help drive acceptance around controversial areas.

Further still, in a high-AI future, connected chatbots with access to the careers market could also help pair the right students with career opportunities. That could range from helping someone with no real idea of their career options by highlighting appropriate opportunities, or to bring high achievers to the attention of hirers.

With so much potential, it is hard to imagine a lot of this coming true, but chatbots are already accelerating from being a basic customer service drone, and as IT services get smarter the range of connected services and the degree of nuance within a bot could become something spectacular to help educators and students get the best start in life.

The future is bright for bots in Education

Since the chatbot market is still a young one, there are huge possibilities and opportunities for them in the education market. Eventually, we will come to the point where classrooms are empty and robots taking the course with a fully conversant system handling complex subjects and debates. But until then, bots and staff will work in increasing harmony to deliver the best results and manage the student body more efficiently.

Chatbots will certainly help boost distance learning, capable of teaching any time, anywhere, and with language plugins can become a universal tool to bring education to places where learning has cultural stigmas or education is rare or expensive. This sort of development could help change humanity for the better, and we wait with interest to see how the role of the robotic teacher can benefit education and students as a whole.

Naturally, bots will also be used to promote controversial, regressive and some offensive content. There will be headlines and pushback against the technology, but the potential for good far outweighs any negative use.

Chapter 9: Healthcare Needs Chatbots

Chatbots are being used effectively in many sectors. The health sector also needs to fully embrace them. In the health industry, they are mainly used as assistants to human beings. The apps take advantage of human intelligence by responding to human queries.

Most patients do not engage with the hospital after receiving medication. Chatbots will help to solve this problem. Hospitals need to take advantage of chatbots and engage with their patients.
There is poor service delivery in the health sector. The entry of chatbots is timely because it will help solve this problem. Expensive healthcare equipment and a scarcity in the number of professionals do not change the patient's expectations of quality and timely health care. Their expectations are backed with technological advancements.

Chatbots will improve the quality of health care at reduced costs. For this to be feasible, healthcare information must be freely accessible globally. Chatbots will provide patients with a doctor in the pocket. They can always ask medical questions and receive answers promptly and in a timely manner from doctors.

Chatbots Provide Guided Access to Information

People do not like queuing to speak to someone at the hospital. Chatbot will be vital as they will be able to collect patient history, provide potential diagnostic, prescribe medication and book appointments. This effectiveness brought about by chatbots will reduce inquiries response time and provide patients with the ultimate customer experience. And the conversations generated by chatbots will help management to analyze data the needs of clients.

We have all Googled symptoms, treatments, hospitals or even doctors at one time. In a past survey, it was found that 72% of internet users looked for health information online. In future, people will get this information through chatbot. Over the coming decades chatbot will change how we interact with doctors, something some large companies have already discovered and they are adding chatbots into their models.

Faster Services

Looking at the maternal, newborn and child health (MNCH) arena, chatbots have made headway in providing expectant mothers with regular updates regarding prenatal clinics. They keep them in touch with health care providers who they can consult at any time. Chatbots have revolutionized pregnancy experience as women receive alerts and notifications regarding their appointments, diet, and exercise. Healthcare providers are able to streamline their admissions, transfers and even discharges without lots of paperwork and bureaucracy.

CEO of SnatchBot Henri Ben Ezra, explained other administrative advantages that can accrue from the use of chatbot: ‘From a healthcare provider perspective, chatbots can schedule appointment requests, update patient's medical records and signal fellow staff when a patient requires medical assistance. Under the security and compliance areas, chatbots are able to provide real time medical analytics reducing the possibility of human error and also reduce errors in HIPPA compliance.’
Chatbots have also proved to be effective in data entry. They have reduced errors and automated the process making it easier for doctors to access patient's information. Chatbots have also been used to send patients medical history and reports in case of change of doctors.

Every day, medical centers collect thousands and thousands of data which is not analyzed in a timely manner. Chatbots provide health care providers and the patient the ability to access it relevantly. This challenge costs billions of dollars annually. Chatbots can be used to synthesize this data churn it out time and make it available for decision making. It could be life-saving.

Improved Relationships

Chatbots play a big role in developing patient-doctor/hospital relations. The kind of customer service that will be provided at a medical facility goes a long way in carving the relationship and hospital brand to the public. The consumers of today want a self-service that is fast and easy. The interactions ought to be personal and engaging. When better-informed, patients are able to take care of themselves and cultivate a proactive relationship with health providers. This leads to improved services, awareness on both ends and improved healthy living.

Customers want to engage with medical professionals regardless of their location. Chatbots help in resolving most of their inquiries without the two being together. The solution to this is chatbots for improved healthcare services for both patients and practitioners.

Here are the summarized benefits that bots can facilitate in the health sector. Chatbots can:

- Respond to patients queries.
- Provide an engaging self-service experience.
- Make follow ups on a patient's progress.
- Notify the patient about prescription refill and care guidelines.
- Allow the exchange of data between different health systems.
- Create a single database for recording information.
- Automatically send information about patients or training materials to the necessary parties.
- Automate data entry to reduce errors.

Chatbots to Treat Anxiety and Depression

Nowadays, a major concern of mental health doctors regarding traditional therapeutic approaches (such as visiting the doctor's office) is that they are confronted with a new phenomenon, specific to our time: the desocialization of their patients, especially the younger ones. Indeed, the young are growing up in a world where they are much more in contact with screens than previous generations. Thus, they have learned to trust the screens, sometimes more than human beings.

It is not only young people who find themselves in this situation, however, since we have now been living for twenty years in a world where the use of computers is commonplace, regardless of age. And when social concerns arise in people who are used to screens, it is difficult to lead them to treatment, because therapy involves a social relationship: the one between the patient and the doctor. This is why new approaches are being invented and developed to adapt therapy to this new reality of the patient.

A study by the Journal of Medical Internet Research, conducted by Kathleen Kara Fitzpatrick and Molly Vierhile of Stanford School of Medicine, in collaboration with Alison Darcy (Woebot Labs Inc.), compared two of these new therapy techniques 'outside the doctor's office'. The study method was to define two groups of 34 and 36 people, among a group of 70 participants, where one would use a chatbot (the Woebot) to follow a therapy, while the other would have to read an ebook, 'Depression in College Students', and serve as a control group, to study the success of the first method.

The first method therefore consists in having the patient interact with a program, through instant messaging. The program has a pre-written script, and is tailored to the according situation (treatment of anxiety and depression). Through instant messaging, the patient has the impression of chatting with a human interlocutor, he/she can communicate in the same way, that's why these programs are called conversational agents or, more commonly, chatbots.

For two weeks, patients in this first group exchanged with the chatbot, while the second group read the ebook on a web-based interface. They were not required to complete the treatment. Thus, the natural tendencies to continue to use the tools given could be shown, this is called 'adherence'. And in

this study, it was found that the chatbot method was much more followed than reading the ebook. It had a lot more adherence.

Patients in both groups completed this two-week study by answering the same set of questions. It should be noted that there was no significant difference between the two groups at the beginning of the study. The results speak for themselves: members of the first group saw their depression symptoms significantly reduce, while there was no reduction in the second group.

It would therefore seem that the chatbot approach is very effective, while the 'reading' approach seems to be almost not working. How can such a difference in results be explained? The study does not focus on explanations, but we can suggest answers based on patient feedback. These indicate that the fact that the chatbot therapy is a process, and not a simple formal exposure, has largely contributed to its success. The 'reading' method was criticized for merely copying the approach of traditional therapy, even though it is not given by a human being.

So it is not an interaction, a process, whereas traditional therapy is given through a social interaction. The conversation with the chatbot, on the other hand, naturally includes the patient in his/her own treatment, pushing him to engage in his own recovery, especially since there is no figure of medical authority (which could frighten him or depossess him of his own care) to force him to go towards a solution of his own problem.

The conclusion is that chatbots are an effective and engaging way to provide therapeutic care to young people, particularly in the case of anxiety and depression. Another study by Danielle Elmasri and Anthony Maeder provides the same conclusions for the treatment of alcohol consumption habits among 18-25 year olds.

Scientifics are therefore in the process of developing this new approach to treatment, adapted to the patient's context and natural tendencies (using instant messaging rather than reading a book on a computer). If web-based applications had already proven their effectiveness, they suffered from a cruel lack of adherence. Chatbots seem to provide a solution to this problem.

The Chatbot

Chapter 10: Chatbots in Banking: The Benefits of Using AI Automation

Customers of any type of business expect help instantly and access to their services in a growing number of ways. Banks are turning to chatbots to help deal with massive volumes of customer interactions. Conversational banking frees up human agents for more complex issues, while the move to app-based and web banking sees customers more used to dealing with digital interfaces, of which chatbots and AI virtual assistants are just the latest step.

Established banks and their challenger rivals are all keen to develop a conversational banking strategy. Those that have been experimenting for some years find themselves with key advantages over banks stepping fresh into the conversational customer service arena.

Across Hong Kong, China, Europe and the Americas as the market hots up for connected banking services, much of the focus is on customer service efficiency, while some will have eyes on a future where blockchain and cryptocurrency or other services could play a part of people's banking lives, and where bots will be faster and more useful than people in making transactions and offering advice.

The changing landscape for banking bots

For now, most banks want to reduce costs. Their consumer bank arms remain constrained either by customer desire for free banking in some countries or low-monthly fees in others. Bots help save on costly customer service centers either in-house or outsourced, and can answer the majority of customer questions without the need for an agent to get involved.

Beyond efficiencies, banks can also keep their more valued agents with the promise of having a greater impact on the customer experience, handling queries that are too complex or personal for bots to handle, even as they become smarter through AI, natural language processing and training experience. Currently, most bots handle balance checks, paying bills, transfers to linked accounts, making appointments and querying transactions.

Beyond the current state of affairs, banks will also need bots that can handle more complex transactions, such as Bitcoin and other cryptocurrencies. These are complex and require the use of third-party wallets and non-traditional destinations. Bots will be better able to handle the load and the complex back-end work, and other potential use cases for chatbots in banking as cryptocurrencies become a normalised part of the business or personal finance market.

Bots will also be better able to offer advice on currency or crypto moves than a person, who would struggle to keep pace with such a fast-moving market. That's as banks need to be smarter, offering a wider number of ways for customers to save money and to use their money more efficiently.

How Banking Bots Work

Most bots are accessible from within the bank's website portal or increasingly a mobile app to maintain security. Social media bots on Facebook Messenger can handle prospective customer or non-account queries, such as opening hours. While some banks use PIN codes to let people carry out secure tasks via Messenger. But, for now, until authentication and ID assurance can cross devices and social media boundaries (think logging into a Facebook Messenger chat with your TouchID, FaceID, FaceTec or similar) the majority will remain behind the bank's log-in services.

Most banks claim that their bots are AI enabled, but few have development stories about how they were built or their chatbot architecture, so it is hard to judge how smart they are. Currently, few interact with other apps or services, but that will change. Bank of America's app-based chatbot Erica is one of the few majors that does, interacting with Zelle, a third-party service for sending money to friends.

As customers get used to dealing with their bot, the majority of users will find it saves them time on navigating a browser or app screens and as bots get smarter they should offer a more personalised experience. This should increase customer loyalty, and make it easier for feedback on customer service beyond the usual, 'please take the quick survey after the call' or those 'how did we do?' text message streams.

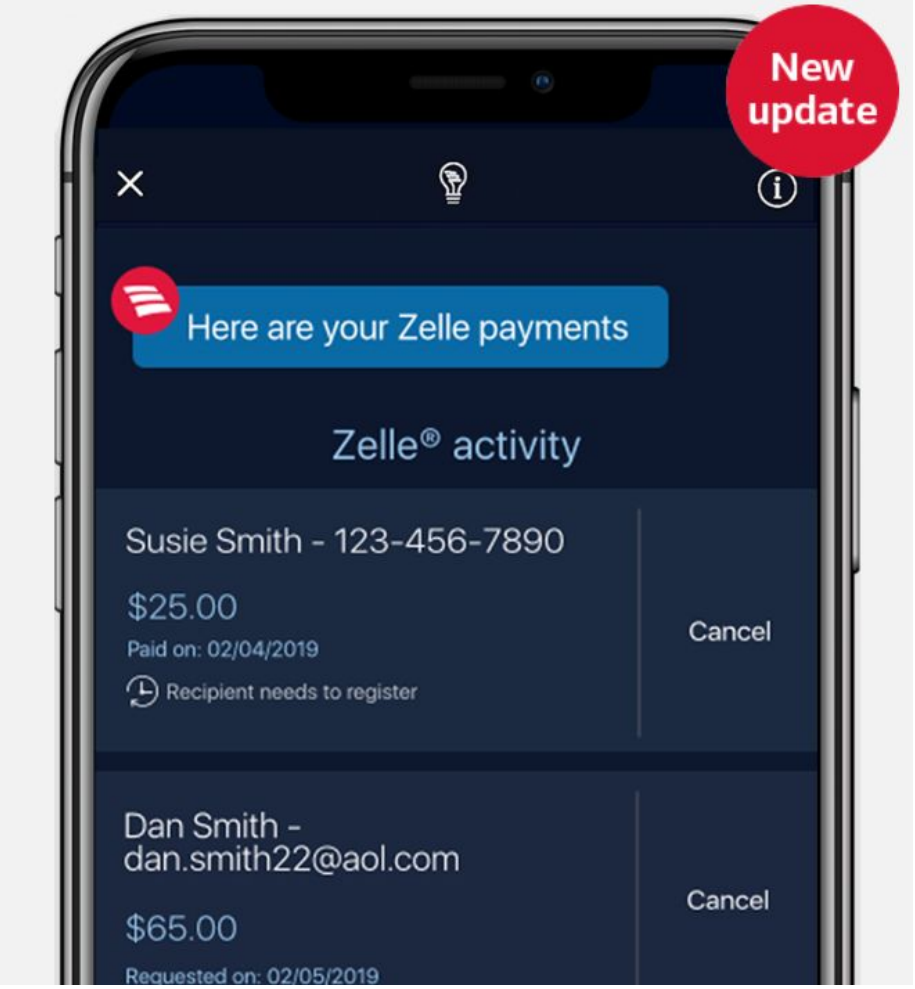
A well-designed chatbot will also be able to offer highly personalised marketing and offers that make sense to the customer in light of their usage and finances. And, as AI and machine learning experience grows, we will see innovation helping banks stand out from each other from making credit offers to help tailor investment plans.
As with most industries, AI automation enables 24/7 always-on support, efficiency savings for customer service automation. But, the AI aspect will lead to bots that can teach themselves new tricks, that can interact with other services to offer more information, and create new revenue opportunities for banks.

Across the banking market, new initiatives such as Open Banking and other FinTech trends allow the banks to unbundle and revalue services. Open Banking allows traditional and new banks to enable consent management, account aggregation and full data categorization. Chatbots can take their part in the process to explain the processes and help move their money to better products or money-saving and other initiatives.

The Best in Banking Chatbots

For more details on the current state of banking chatbot, check out these live examples of chatbots in the banking industry.

The most talked about chatbot in banking circles is Bank of America's Erica. With over 6 million served since launch in 2017, she helps with transfers, balance checks and the usual range of consumer banking services to save customers time. BoA isn't stopping there, with regular updates including financial insights for personalized and proactive guidance to help customers stay on top of their finances.



In Australia, the Commonwealth Bank uses a chatbot called Ceba to provide support for over 200 banking tasks: highlighting why banking bots need to be flexible and to address a wide range of needs. Tasks it can be asked vary from card activation to making payments. One key issue here is how any bank handles customer feedback. While it might be useful for most, Ceba comes in for lots of social media criticism, but the bank's human agents are always on hand to reply and offer support or a solution.

Brazil's Banco Itaú takes a very social approach to its Facebook Messenger chatbot, Alaor. It acts as a financial advisor and savings guru to customers. offering tips on how the consumer can save or raise money and invest it appropriately. Also with a Latin flavour, Santander with operations in Europe and South America, has Sandrine to help customers resolver over 1,200 queries.

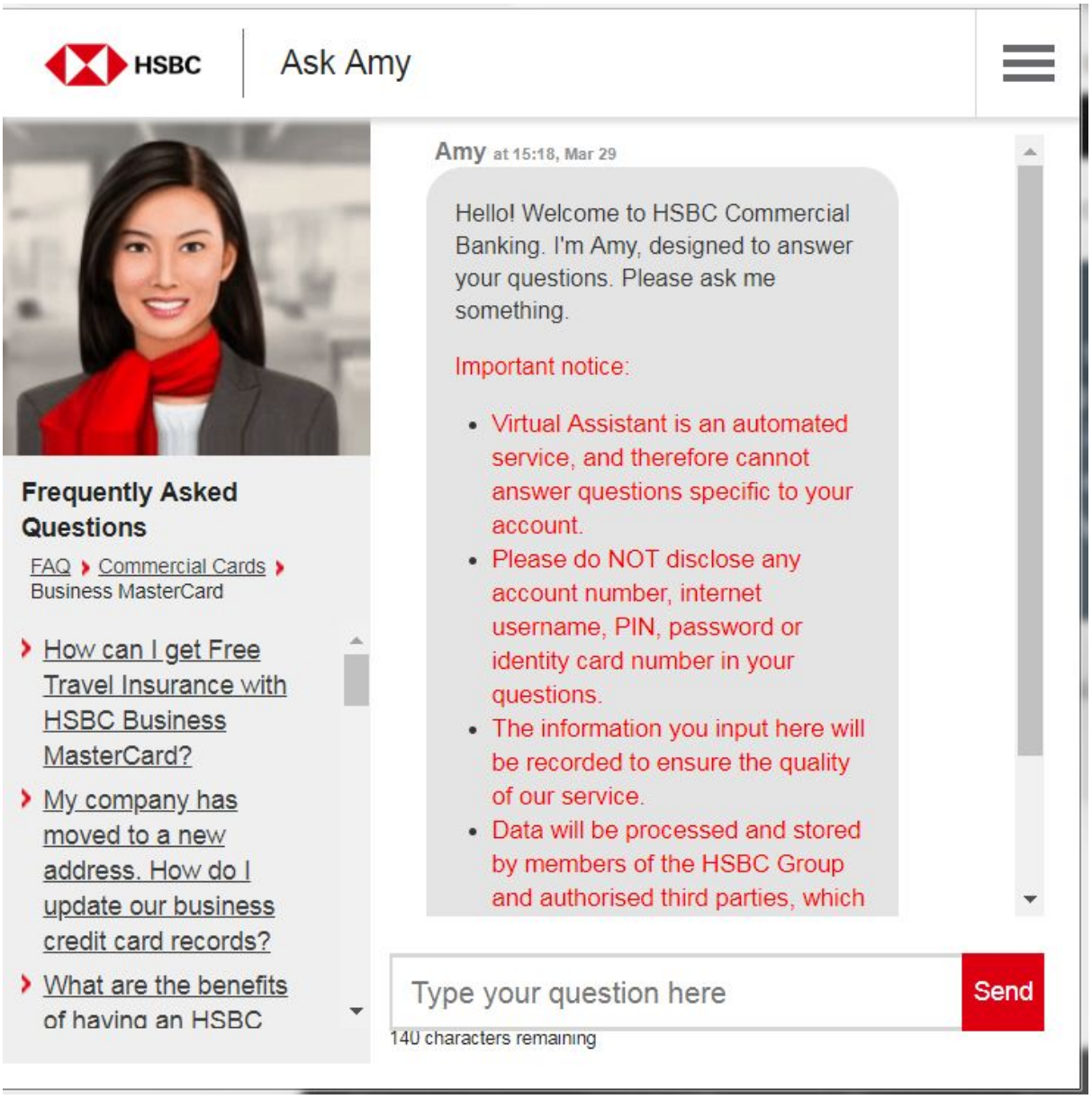
Up and coming banks around the world from North Africa to Asia are often leading the way and outstripping their western rivals in exposing customers to bots. In Lebanon, BOB helps Bank of Beruit customers choose from loans or accounts, and also talk to agents, not forgetting the human aspect of banking. United Bank for Africa's Leo offers money transfers, payments and can help new accounts.

Using Facebook Messenger, customers must use a PIN code to access account services.
In China, HSBC launched chatbot 'Xiaofeng' and 'Xiaohui' in 2018 for consumer and business banking customer queries, FX market updates. The company also launched a WeChat service account adding features like Payment Tracker and Trade Tracker for the popular Chinese social media service.

Breaking away from the consumer banks. Deutsche Bank has Debbie, helping finance traders work across markets to perform trades and so on.

In Hong Kong, HSBC (again) has Amy, a friendly face for commercial bank customers. She doesn't offer standard consumer banking queries, but can help with many of the wider aspects of business banking, from setting up accounts for different types of business, from sole traders to Limited Companies and other types.

While these bots are far from the consumer world, they help a responsible business learn more about the scope and limits of bots, and how they can impact everyone's banking experience in the future.



and most Chinese and Indian banks lead their offerings with bots to deal with millions of requests.

Beyond the big name banks, challenger banks are using bots to augment their limited customer service, to partner with other providers or are looking at going all-digital on their support efforts. The likes of the UK's Monzo has been using chatbot Plum to help customers analyse their spending or choose to invest in various savings tailored around themes such as ethical investments.

Where Banks Go Wrong (and can go Right) With Chatbots

Across all these banks and many more, there are varying levels of bot quality and service offering. Many banks still don't have a chatbot, such as HBOS/Halifax in the UK. This demonstrates an industry that is both in flux and uncertain of how to proceed. Those that do chatbots well are clearly in a better position than those lagging behind.

Some banks just don't seem to 'get' technology. With feature limited or simple duplication of existing features. Take Lloyd's Bank, one of the biggest names in the industry, whose chatbot, if you can call it

that, is simply a replication of the company's FAQ, with no effort at language understanding. Few, if any customers would find value from this.

Banks that have had poor early bot experiences might be concerned about future efforts, or at least about launching without making a serious commitment to technology and development. But time is not on their side, as a generation of tech users grows up used to bots as part of their technology diet on mobile apps or social media.

Consumers want a fast and safe experience, that guarantees their security and privacy. The banks need to ensure their bot never pretends it is anything other than a machine. All its options need to be clear to the user, with issues like data retention and security explained on request.

New AI trends like deep learning, deep reinforcement learning, and automated machine learning will help make the bots better and more useful. Improvements in translation will make banks more accessible to a global audience, and banks can focus their bots on key areas like customer acquisition and brand management, moving beyond traditional customer service and account management. And that's before banks need to start dealing with cryptocurrencies or blockchain transactions.

The Future for Banks and Bots

Disruption and transformation are common boardroom buzzwords for banks. People might soon switch banks as regularly as they do phone or power provider. The chatbot will be a key tool in engaging and retaining customers, helping to build relationships, making them of interest to all but the most traditional of customers.

Banks large and small are all technology-focused, but their adoption of bots has been typical of other industries with successful market leaders and a host of failures. But bot builders and banks are learning fast what their customers needs and the bots of the 2020s will be a daily part of everyone's lives, as they take over from traditional support avenues.

Whatever your bank's current status, expect a bot to pay a more important part in the banking process in future, providing support and proactive advice to help us all save money. In an era of mobile-focused banking, digital wallets, cash sharing services and so on, all will need a bot as part of their service.

Chapter 11: How HR Companies use Recruitment Chatbots

Human resources are key to the running of any business, and the HR department is increasingly looking to technology to make recruitment a fair non-biased procedure, while using bots to help onboard new recruits and to automate many of the simple processes that all workers go through. Using bots and new technology allows HR to focus on driving the business forward through progressive strategies and finding the best people to help.

Rise of the HR Robots

Making the news recently, a Swedish recruitment firm has started using a robot to conduct job interviews, highlighting the rise of AI in recruitment. The technology packed head sits on an office desk and conducts the interviews on behalf of the recruitment agency. This comes as a stark counterpoint to the growing tales of bias, sexism, old-boys networks and other twists that can skew the outcome of a hiring process, leaving the best people for the role far behind.

The robot, called Tengai Unbiased, developed by Furhat Robotics is being used by TNG, a recruitment business driven by Elin Öberg Martenzon, a pioneer in advanced recruitment technology and at the cutting edge of HR trends. Billed as the world's first unbiased social robot recruiter, Tengai represents the new face of automation in the recruitment sector, even though more anonymous bots have been holding interviews for some years.

Speaking at a Nordic Recruitment event, she notes that 'bias and prejudice are real problems in recruitment today along with candidate shortage, dysfunctional labor market and exponential change. How do we navigate in a changing recruitment world with a massive flow of new technology, and how do we fulfill candidate demands without disturbing the candidate experience or the result? What can an unbiased robot recruiter add to and reduce from the recruitment process?' You can read an FAQ from Tengai's developers answering some general questions that both candidates and recruiters might be asking, before being faced with a robotic audience when it comes to a job interview. Tengai has an OS that follows chatbot-like constructs with a question tree, and can provide a touch of personality, but the results it provides to the recruiters are all standardised and anonymised to eliminate bias.

Recruiters get transcripts of the interviews to review and choose which candidates go on to personal interviews. Beyond interview situations, bots can help monitor the process. In 2016, Smashfly claimed some 74% of candidates drop out of the recruitment process. Bots can help keep them engaged, answering after-the-interview questions and providing automated updates as the process moves forward.

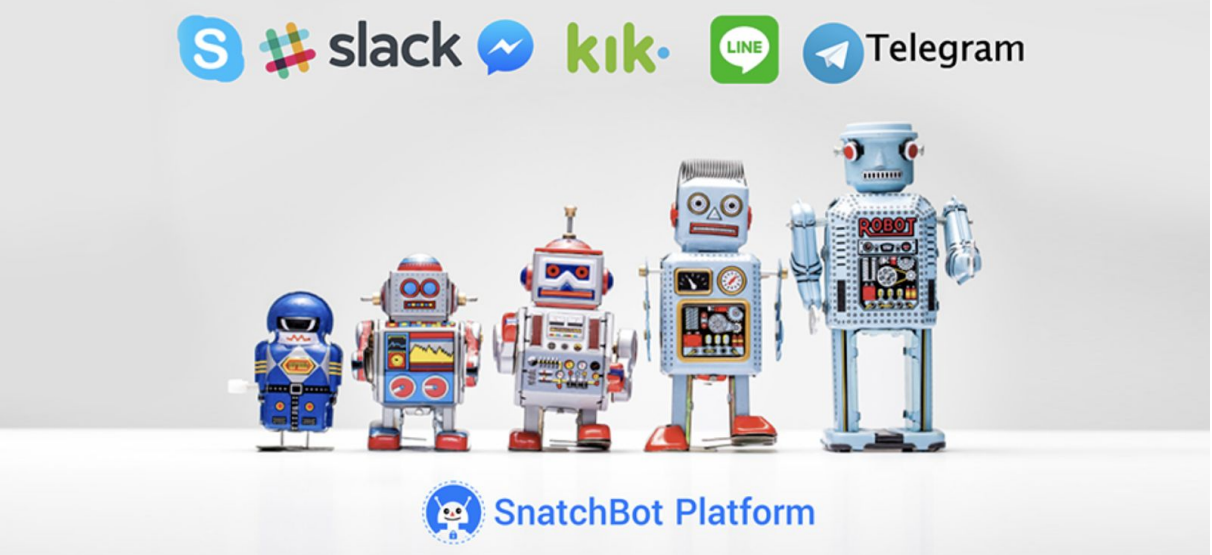
What is a Recruitment Chatbot?

Chatbots are performing a similar role for online interviews, helping eliminate bias, without the need for unearthly heads that may put candidates off. Any business can build its own chatbot to conduct such interviews, or acquire one off-the-shelf, or have one custom-made depending on the depth of the interview tasks.

Chatbots solutions can operate using a plain script, use natural language processing (NLP) and natural language understanding (NLU) to recognise and react to keywords from the candidate while deeper AI bots can better understand complex conversations and access wider data sets to respond in an appropriate manner.

In the very near future, incredibly smart bots will be able to field all types of interview questions and analyse the responses from candidates. For now, as chatbots become more common in HR, they can

help provide a baseline set of results for first interviews. They can also deliver knowledge, aptitude and other tests to all candidates. If a business is hiring temporary or seasonal employees, the bot can be used to identify groups of suitable candidates based on objectivity and skillset, rather than relying on intuition, their demeanour and other elements that might influence recruiters during a face-to-face interview.



Having eliminated weaker candidates, the best can be put forward for the traditional panel interviews and other rounds, saving both recruiters and candidates valuable time, travel and other expenses. While these might sound scary for both traditional candidates and HR professionals, machine learning recruitment and CV screening are already taking place around the world, and the fidelity of these services will only improve, with the aim of helping HR, not replacing workers.

The Roles for Chatbots in Human Resources

Recruitment is just one aspect of the HR department. Onboarding, personnel management, pay, disputes, discipline and other areas that take up much of their time. A mix of scripted bots and AI ai in recruitment and HR can help the department manage its time and those of workers better, using them to answer simple questions, creating an accessible knowledge base of HR information.

Bots can also handle direct tasks like booking time off work, categorising sickness, requests for equipment or access to services, changing passwords and much more. Using HR chatbots will streamline many operations and they operate 24/7, offering increasingly natural language interactions and can be linked to other services to feed data or update dashboards, providing a smooth workflow and saving HR professionals from being on the phone or faced with stacks of email requests.

The recently published State of Play: Global Employee Engagement Trends report tracks employee engagement trends. It highlighted how workers like to be a part of consultations and surveys, something bots are ideally suited to. Training and education can also be bot-led across the workplace as businesses seek to build a new generation of loyal and engaged associates in an increasingly flexible and short-term career market.

Even businesses with intranet HR portals can use bots to widen access to the service, using kiosks for those workers who do not have regular access to PCs or company mobile devices. For global businesses, bots can also automatically translate content to offer a centralised service.

Success With Real-World Job Bots

Whether for interviewing or managing the HR process, the business case for chatbots continues to grow as successful products arrive and thrive, such as MYA, a recruiting chatbot used by 40 of the top Fortune 500 companies including cosmetics brand L'Oreal who used it to help revolutionise its recruiting process.

The company, 'adopted AI and Machine Learning to avoid the non-value adding tasks and focus on more value-added tasks in recruitment.' It used 'artificial intelligence and natural language processing to ask questions, verify qualifications, and answer questions from job applicants about things like company culture, policy, and benefits, delivering updates to the recruiters letting the know about the "best-fit" and "non-fit for the job" role.'

To highlight the potential depth and pace of change, Phanindranath Kakarai, head of HR for Edelweiss Group India pointed to 'technology as not just a tool, but a way of life going forward - developing and strengthening teams to be nimble enough to leverage any technology, (AI, machine learning, robotic process automation etc).'

In the UK, motorcycle brand Triumph is looking to provide workers with a premium experience based around Human Capital Management (HCM) software and chatbots that can answer HR and other queries. Business service firm Pitney Bowes used a chatbot to help boost the workforce at an ecommerce distribution center, pre-screening candidates for a variety of roles and helping move the interview process forward.

Whatever a company's or department's opinion on the technology it will have a greater impact on all areas of business, which cannot be ignored. Taking part in a recent ServiceNow survey of 350 HR leaders, some 92% agreed that the future will see chatbots working as part of an overall service providing an enhanced level of employee service.

For those looking to develop or invest in bots, the best time is now, as the speed of progress and development accelerates. Vendors will soon be offering contextualized, transactional API-based chatbots that can fit into existing IT systems and help move the business HR process forward.

Building Your HR Chatbot

Your HR department might not be the largest on the most technically proficient, but can still benefit from a chatbot to begin engaging and interacting with candidates and workers. Even the simplest chatbot can help prospective candidates learn about the jobs on offer and find out about the company. While workers can ask the bot questions rather than hunting for a FAQ or waiting to talk to someone in HR.

Bots can be easily built and deployed on an Intranet or career website, or linked to messaging services like Viber or Skype for office communications. Platforms like SnatchBot offer cloud deployment removing the need for on-premises equipment and minimising time spent building a bot through a code-free design approach.

As the HR conversation becomes more of a two-way process, as businesses become more progressive and employees seek higher levels of engagement, bots can help deal with much of the groundwork.

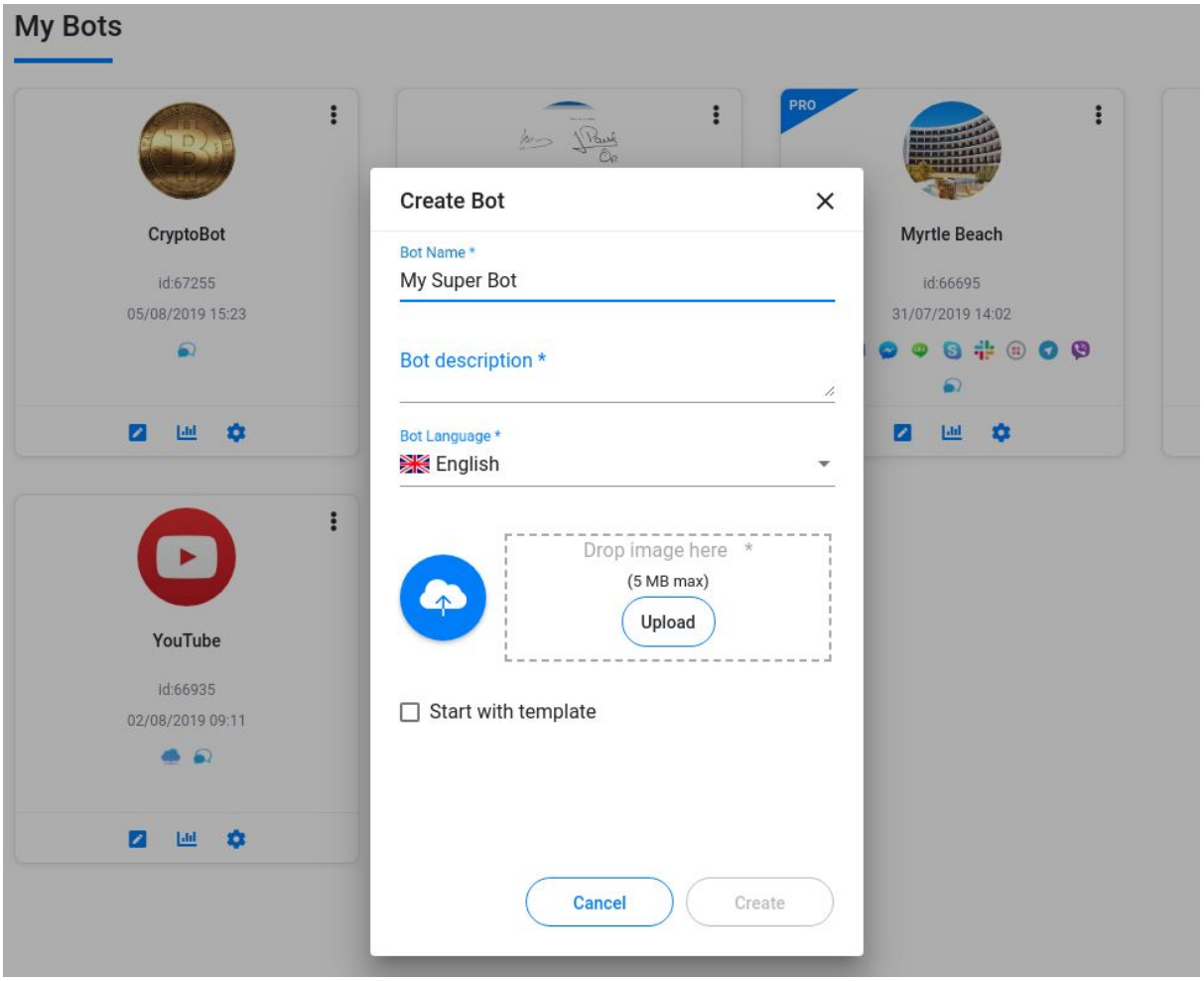
The future in many offices, departments and across global enterprises is one where bots will be taking on a great deal of work, and companies that lag behind, for all the value of the human touch, will be wasting a great deal of time and effort on conversations that can be better handled by a bot.

Part 2: **Building Your Chatbot**

Chapter 12: Getting Started on Your own Chatbot

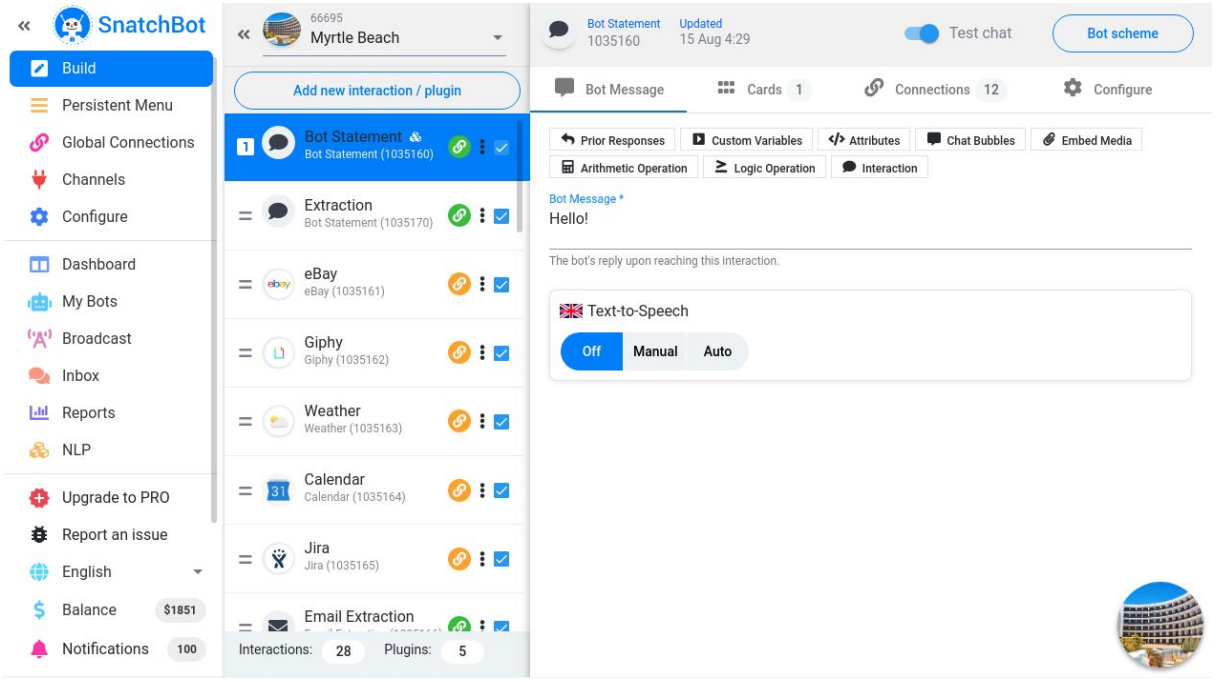
This section of the book uses the SnatchBot platform to explain in detail how to build your own chatbots. There are a number of reasons why you would want to create chatbots with us: firstly, we have a free-to-use option that includes all the features you need to get started, including the ability to make NLP models. While you will probably want to take out our Pro-Plan for your bots in due course, as your bots perform real work, the free option is perfect for learning. Secondly, our NLP system is proprietorial, which means your bots will not be dependent on third-party systems. Thirdly, our platform is very intuitive, so you can get up to speed quickly and, indeed, solve complex challenges, without needing to have any background in coding.

To start with, then, go to snatchbot.me and create an account. All you need is an email address. When you first log in, you will be taken to the dashboard, which you will use to see all your chatbot analytics. Select **My Bots** from the options in the blue box on the left of the screen and then click the Create Bot button:



Next comes the basic building blocks of the chatbots conversation: your bot will communicate with users through 'interactions'. Click **Build** from the left hand menu. Click inside the Add new interaction / plugin button.

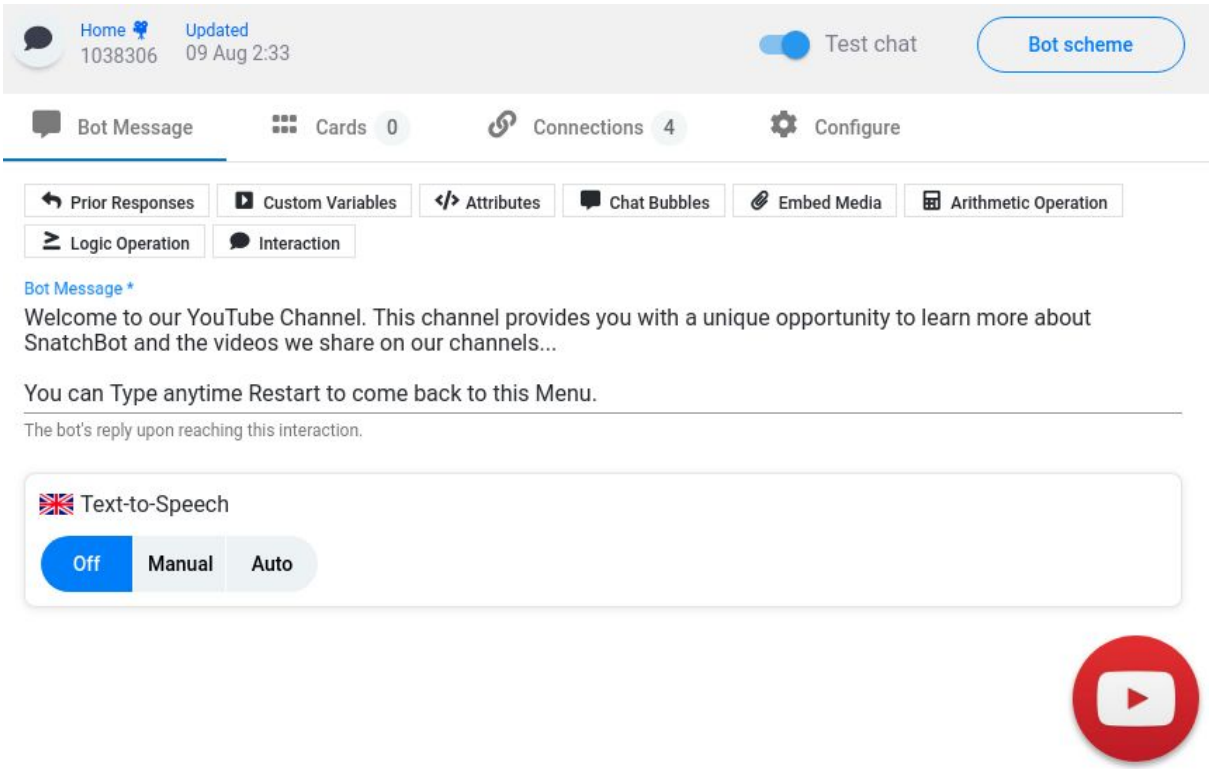
Interactions are available in a wide variety of type and later we will discuss the advantages of using the various built in functions and features the different interaction types: features such as action buttons, translations, payment processing, email extraction and much more. All of these can be added without you needing any technical knowledge. But for now, choose Interaction Type and pick the first option, **Bot Statement**:



You will need to give the interaction a name.

> **Tip**
>
> Pick names for your interactions that will allow you to distinguish them from each other. Later, as your bot becomes more complex, you will want to be able to accurately identify the correct interaction to make connections with. So, for example, 'Yes to email' is better than a simple 'Yes'.

Now you'll see editing tools appear on the right hand side of the page. Start by filling in the text for the bot's statement. For example, if this is going to be the starting interaction, your text might read: 'Hi, I'm a chatbot for the company, would you like to talk to me about our latest offers?':

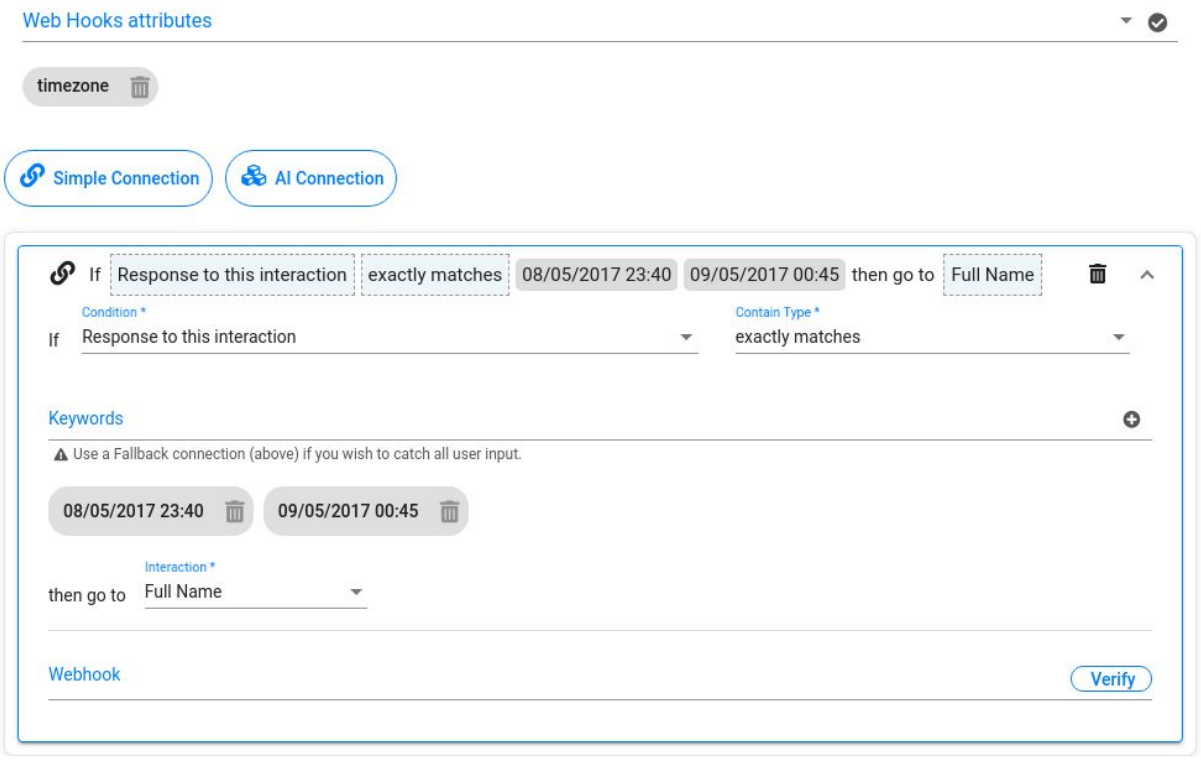


You do not have to save your bot after making changes such as adding new message text. It is automatically updated as you work.

Next, you will want the conversation to branch according to the user's response. There's a drop down menu that makes it very simple to connect the interactions of your chatbot in whatever way you want. SnatchBot provides a comprehensive range of logical possibilities to allow the tree of the conversation to branch in a variety of helpful ways.

Before we look at them, however, you'll need to create some more interactions, in order that you can link them up. First, therefore, make three or four new interactions.

As you make these new interactions you'll see them listed in the order you have created them. Select one, then look across to the right of the screen at the editing tools for the interaction. There you will see at the top a **Connections** button. Click it:



These connection boxes allow you to make links between your interactions, using the form of a logical statement: if x then y. For example, If *Response to this Interaction contains (whole word) Yes then go to Approval Given*. It's very straightforward and intuitive and managed with drop down menus. The best way to learn about your options here is to click Simple Connection and open the drop down menus and look at what is available to you.

You'll see that you can make connections on the basis of simple responses but also, by using the Exactly Matches option, you can identify particular phrases in the user's response and make a connection to the relevant interaction based on them. You can also direct the conversation according to what the user hasn't said.

At this stage, you'll want to create several interactions and connect them up. All your interactions should be standard ones. You have the option to create NLP ones, but let's leave those for later.

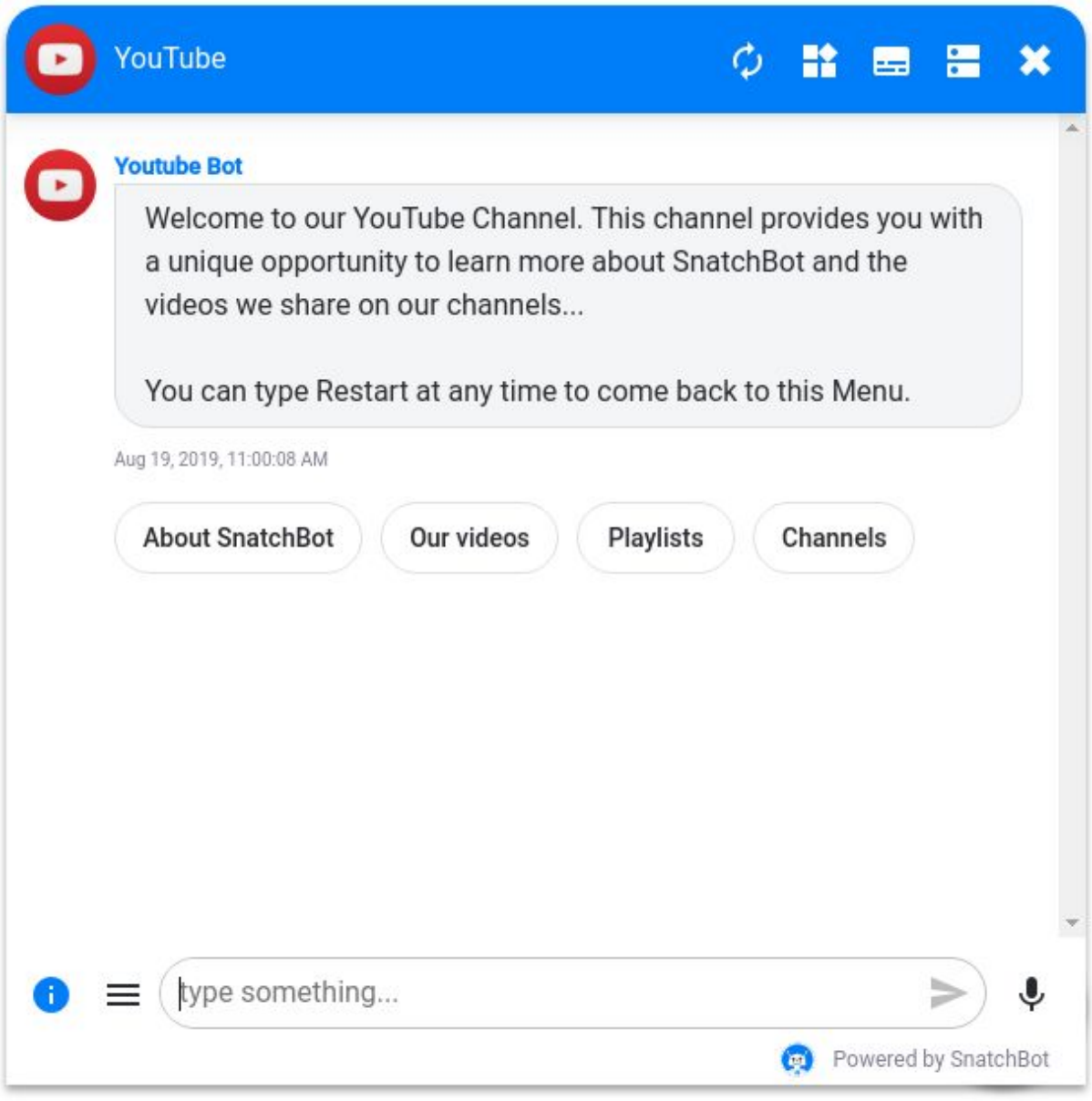
For example. You might build an interaction called **hello**, in which the bot says: 'Hi there, would you like to chat to me?'. Then an interaction called **agree** in which the bot says: 'Great, happy to meet you.' And one called **disagree**, in which case the bot says: 'In that case, goodbye!' In your first interaction, **hello**, you click add connection and use the drop down menus to set the connection as: If *Response to this Interaction contains (any part)* yes *then go to* agree.

Then do the same, with: If *Response to this Interaction contains (any part)* no *then go to* disagree. Congratulations, you've made your first chatbot. The conversation is a bit short and it might not even work correctly (if the user answers, 'I do' instead of 'yes' or 'no', the bot will pause). Still, creating interactions and linking them up is the core activity of even the most sophisticated bots and now you know how to do this, you already have the ability to create long, wide-ranging conversations.

Tip

Pick names for your interactions that will allow you to distinguish them from each other. Later, as your bot becomes more complex, you will want to be able to accurately identify the correct interaction to make connections with. So, for example, 'Yes to email' is better than a simple 'Yes'.

As you build your bot, you will want to test your progress regularly. This is straightforward. The button you need is in the top right corner of the screen. When you click it, the test chat window will pop up. If you cannot see the test chat button, check that you have the Test chat toggle at the top of the chat message screen set to on.



When you've finished the test, just click away from the test page and you'll return to your bot.

The other connection options are worth exploring and thinking about. They are very versatile. As well as the standard 'response to this interaction' choice, the **If** menu also allows you to select 'Extracted data from this interaction' and 'custom variable'. I'll discuss both below, but this is extremely valuable in being able to direct the conversation according to earlier events.

Here, if you are taking your first chatbot building steps, the next drop-down menu might be more interesting to explore. The options are: contains (whole word); contains (any part); contains all of; doesn't contain any of; exactly matches; begins with; ends with; does not begin with; does not end with.

How each of these choices operate should be clear enough from the descriptions (e.g. **If** response to this interaction *ends with* 7 **then** go to Interaction F means a user input finishing with 7 would trigger the move to Interaction F). Contains (whole word) and contains (any part) are different in this way: whole word means the chatbot looks at the distinct words for a match, any part means that if the entry forms a part of the key word, it will be recognised. For example, contains (whole word) 'talk' will be triggered only by 'talk' and not by 'talking'. Whereas contains (any part) talk will be triggered by both 'talk' and 'talking'.

Note: If your chatbot is intended to work via email exchanges we advise using contains (any part) rather than contains (whole word) or exactly matches as some email clients add characters to the text in the messages.

A very valuable feature is Fallback. This allows the conversation to move on, regardless of what the user has said. Fallback happens if no other conditions are met. Imagine you have created an interaction with the message: 'what's your favourite colour?' and two connections, one, **If** response to this interaction contains (whole word) 'red' **then** go to red, the other, **If** response to this interaction contains (whole word) 'green' **then** go to green. Created in this way, the bot will only move on if the user inputs 'red' or 'green'. Otherwise, it just stops. If you add a Fallback to a different interaction, then any other response than red or green will move the conversation to that interaction.

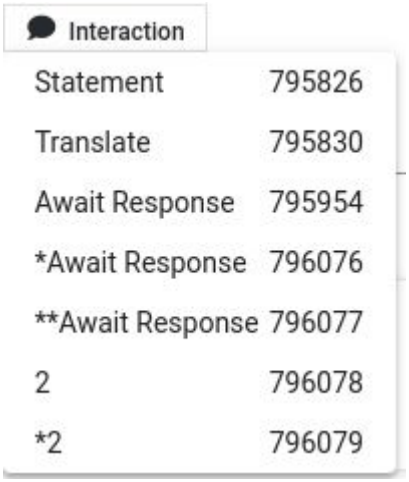
If you have no other connections than Fallback, then whatever the user says, the conversation moves forward to the interaction pointed to by Fallback. The point isn't just keep a conversation flowing, having a Fallback only interaction can still be a great idea, as it gathers user responses you can work with later in the conversation. For example, if your interaction was: 'what's your favourite colour' and your only connection was the Fallback to an interaction called dress size ('and what's your dress size') then the conversation flow might look as follows:

Bot: What's your favourite colour?
User: Turquoise.
Bot: And what's your dress size?
User: 12.

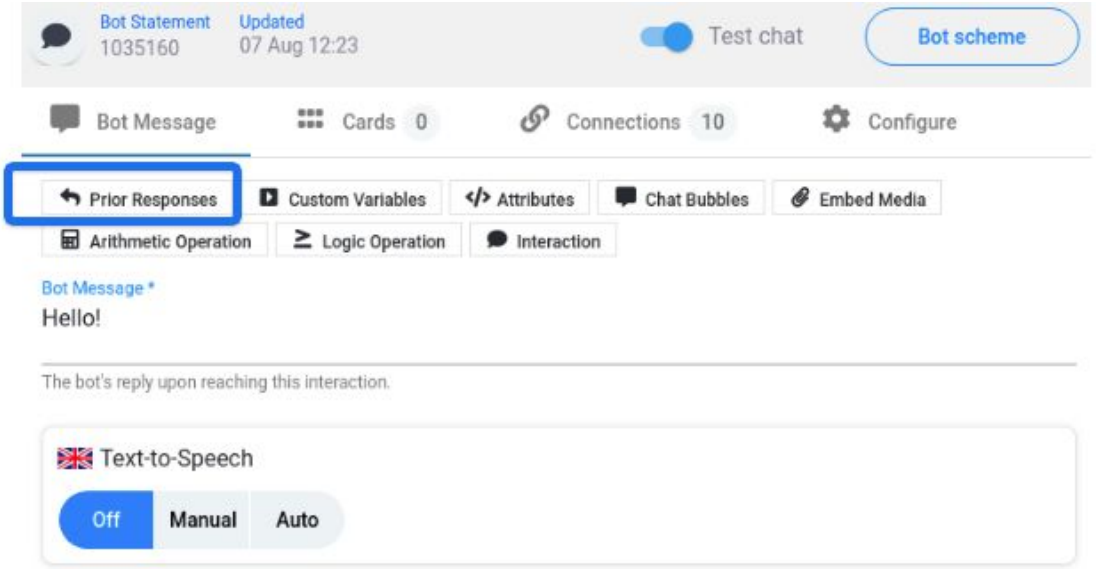
The input of 'Turquoise' is stored and available to the bot. In the next chapter we'll show how to access this (it's easy) and define and work with other user data.

Chapter 13: Extracting Emails, URLs, Addresses and Other Data

Very often, you will want to refer to earlier parts of a conversation and apply what the user has told the chatbot to guide what happens next, or, simply, to store information like email addresses, phone numbers, etc. The most basic tool in this regard, is your ability to refer back to all the previous steps of the conversation. Every interaction has a unique number. You can just click the word **interaction** at the top of your message editing screen and they will pop up.



A simple and powerful shortcut for drawing on previous interactions is the Prior Response drop down tool available from the button at the top of your message editing screen.



You can use this to quickly select from two options, Response Text and Extracted Data.

We'll explain about extracted data shortly. For now, note how to bring a previous response back into the conversation. It is to click on Response Text (or write it out yourself) and get the following formulation:

[responseTo interaction=ID fallback=TEXT]

Enter the ID number of the interaction that has the user's response you want to refer to. (The fallback message is for if something is wrong, most likely that the ID number is an error. Hopefully, it won't be needed, but in case it is triggered you might replaced TEXT with something like, 'oh, I seem to have made a mistake, please enter that again.')

The typical reason for the prior response feature is to check data or to make the conversation friendly, with the bot using the person's name.

You might begin a conversation like this:

Interaction 1. Bot: Hi, I'm a chatbot, what's your name?
User: Judith.

Interaction 2. Bot: Hi Judith. How can I help you?

To get the word Judith to appear in the second interaction you'd have written the bot message as follows: Hi [responseTo interaction = 1 fallback = oops, an error has occurred, please start again]. How can I help you?

Or, another example.

Interaction 11. Bot: What colour would you like it to be?
User: Green.

Interaction 12. Bot: What size would you like it to be?
User: Medium.

Interaction 13. Bot: What day would you like us to deliver it?
User: Monday

Interaction 14. Bot: What time would you like us to deliver at?
User: 6pm.

Interaction 15. Bot: Let me confirm I have the details correct. You would like the colour to be green, the size medium, the delivery day Monday and the time 6pm? Is that correct?

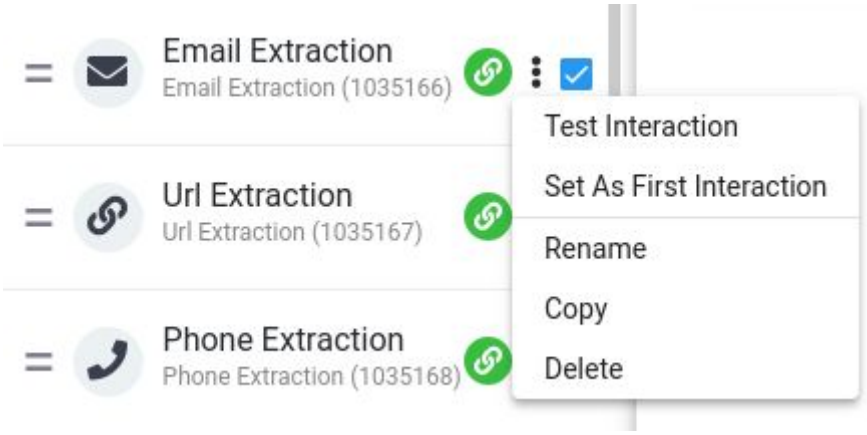
To create interaction 15, you'd have written the bot message as follows:

Let me confirm I have the details correct. You would like the colour to be [responseTo interaction = 11 fallback = error], the size [responseTo interaction = 12 fallback = error], the delivery day [responseTo interaction = 13 fallback = error] and the time [responseTo interaction = 14 fallback = error]? Is that correct?

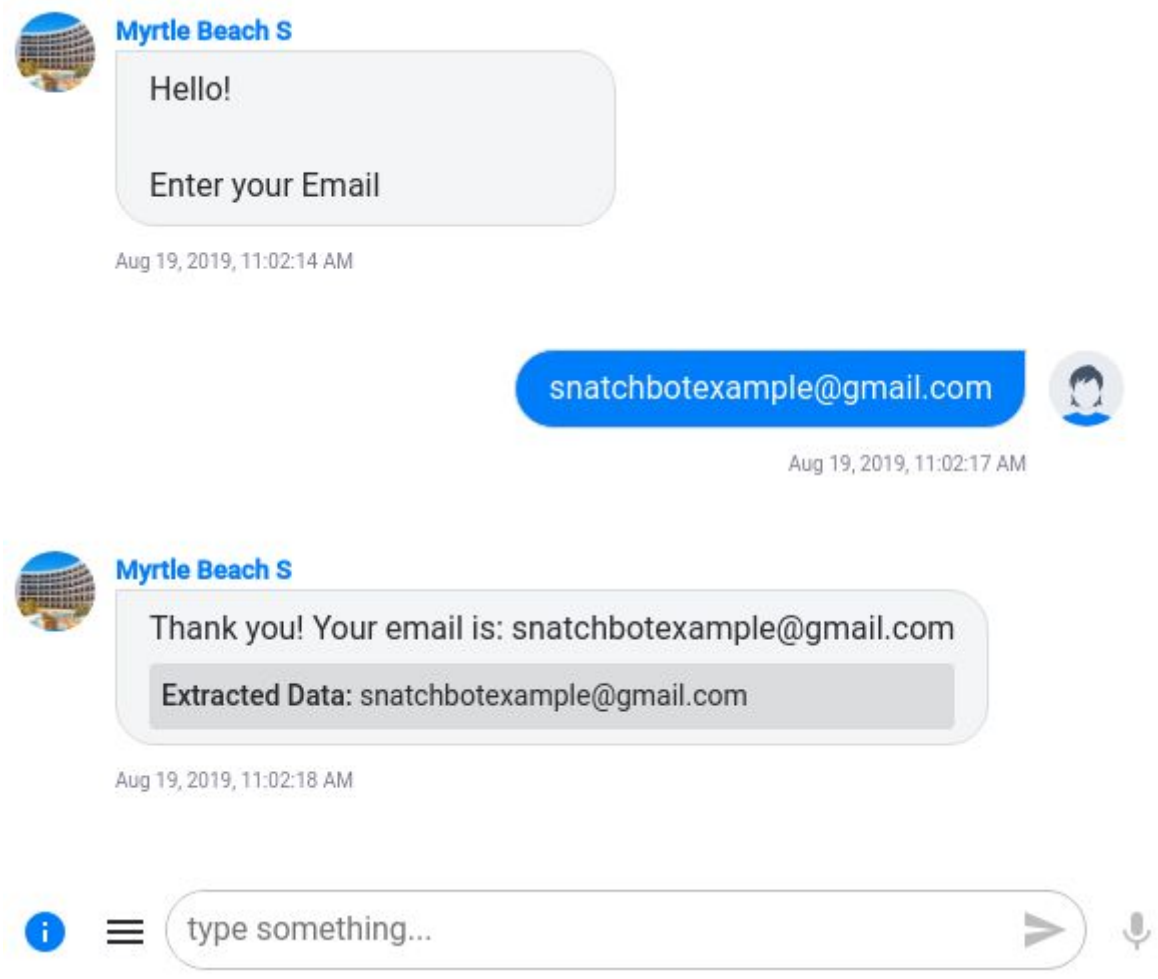
In other words, it is very easy to draw on previous user responses. If you want to save these responses in a format suitable for exporting to an email or a database, we'll explain how to do that in chapter 16 (in brief, you define an attribute and export it with a webhook). For now, let's look at extracted data, which is like a prior response, only we've created the tools for the bot to check the data has the form you would expect and to highlight this extracted data in conversations and on your dashboard.

You'll recall the fact that you can choose different types of interactions in creating your chatbot. Well, many of the options are for the chatbot to expect a particular type of data, other than a standard response. Thus, there are interactions for emails, URLs, phone numbers, dates, numbers, addresses and time intervals. In this case, we'll take the example of email extraction, but the process is the same for every kind of extracted data.

Click to add an interaction and from the drop down menu of interaction types, choose *Email Extraction*.



The interaction editing box is very similar to a standard Bot Statement, except that it has been pre-configured to test if the user's response is a valid email format.



You can change the default error message, which will be triggered if the response isn't an email address. So that's one advantage to using the Email Extraction interaction, but its real use is in regard to your ability to use it in the conversation and to view emails in lists of analytics and records. To easily see the data you have extracted (of any type, not just email) tick the **highlight extracted data** checkbox in the list of interactions.

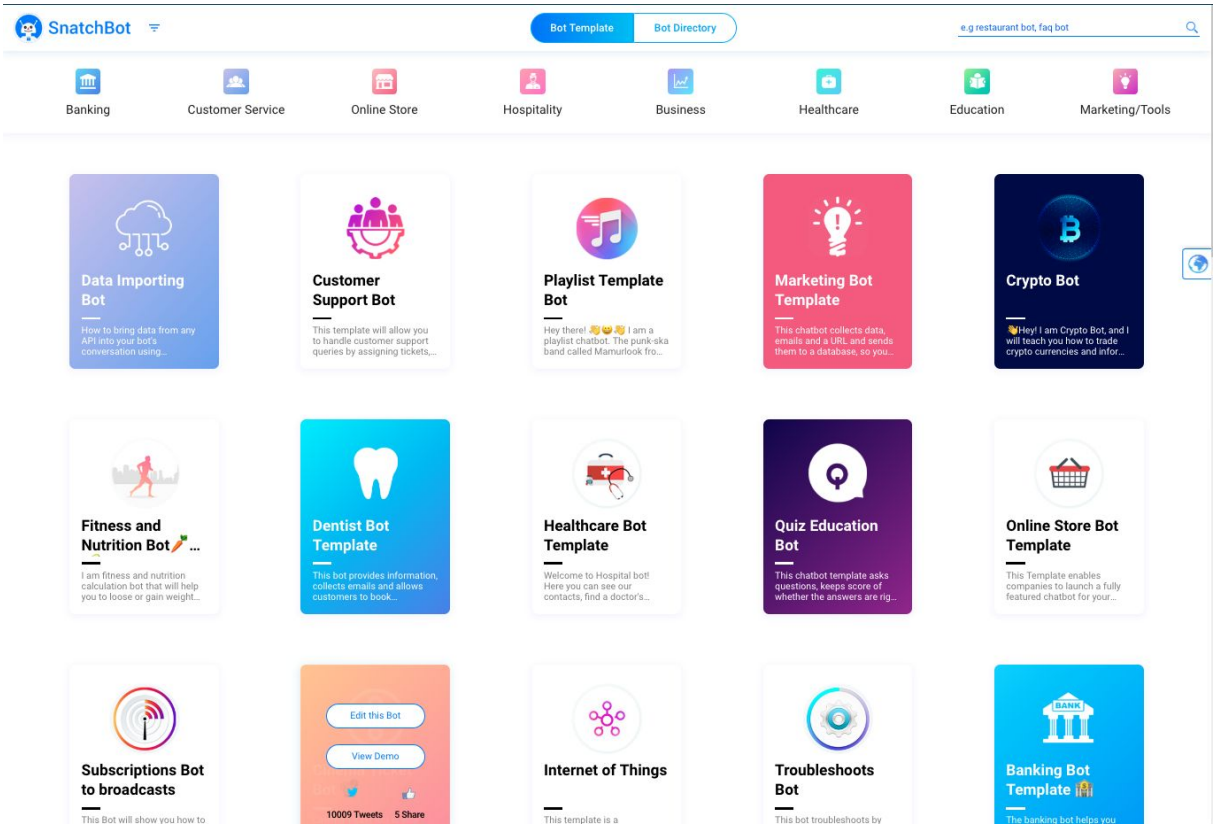
Extracted data can also be used to filter your **Reports** page.

You can filter your results (and export them in Excel or JSON formats) by the type of extracted data you are interested in.

And you can also make connections that are conditional on having obtained extracted data of a certain type. So, for example, you could have the bot branch a conversation according to whether a particular email has been entered.

So far you've learned to make interactions, to connect them, to extract different kinds of data and to be able to refer to user inputs in the subsequent flow of the conversation. Already that's a solid basis for creating a useful chatbot. Next, let's look at how to load templates that quickly supply you with a host of other useful features.

Chapter 14: Using a Template from the Bot Store



The SnatchBot store has around fifty chatbot templates and we are always adding more. They give an immediate start to your chatbot building efforts and are geared to solve common challenges in each of the major verticals, namely Customer Service, Sales, Hospitality, eCommerce, Health, Financial, Marketing, Event Management, Restaurants and Education.

They are also a fantastic resource for demonstrating the key features of our platform. You just have to import them and examine their internal structure and connections to understand how to achieve a whole range of tasks.

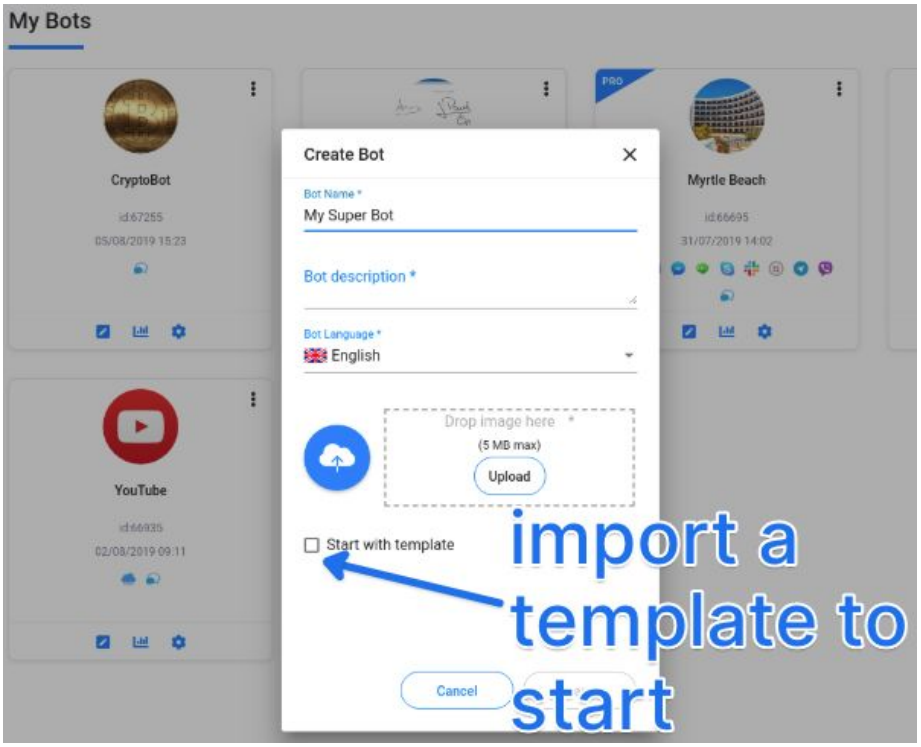
For instance, on https://snatchbot.me/botstore/template click on the **Edit This Bot** button of the Customer Support Bot (https://snatchbot.me/botstore/template/29308). Agree to create the bot (you'll have to upload a small icon also) and it will be added to your bots.

This bot is a simplified version of our actual community support chatbot and if you chat to it, you'll be directed to resources and previously answered queries that you might find helpful and interesting. Looking at the internal structure of the bot should be helpful too. It has a Live Chat option, which is a much-desired feature in many use cases. Clicking on any of the send data emails will show you how to send a webhook (in this case to Zapier, to build a database with the result of the conversation). And you can chat to the bot to learn more about integrating with Zapier to connect with Google Sheets or Trello.

Some other useful templates to learn more about the platform are:

	Data Importing Bot. This bot will show you how to bring data from any API into your bot's conversation using Integromat. It shows you how to define attributes and add them into your webhook.
	Engagement Game Bot. This bot makes clever use of the randomised response feature to create a fun game. It also shows you how to post images and keep a score based on user responses.
	Quiz Education Bot. Another template to help you get to grips with how to track user responses and use them is this quiz bot. It also illustrates some of the arithmetic features of the platform.
	Vimeo Bot Template. This template is great for showing you how to use your bot to present videos and also how to make cards that neaten the appearance of your chat. The videos it shows you are useful demo ones too!
	SnatchBot Survey. This will show you how to embed gifs and also gather data into attributes for export to a Google sheet.

You can access templates when you create a new chatbot, just check the *start with template* box:



With so many templates to choose from, browsing these resources is well worthwhile and hopefully will provide you with an appropriate structure around which you can customise the bot to your own particular challenge.

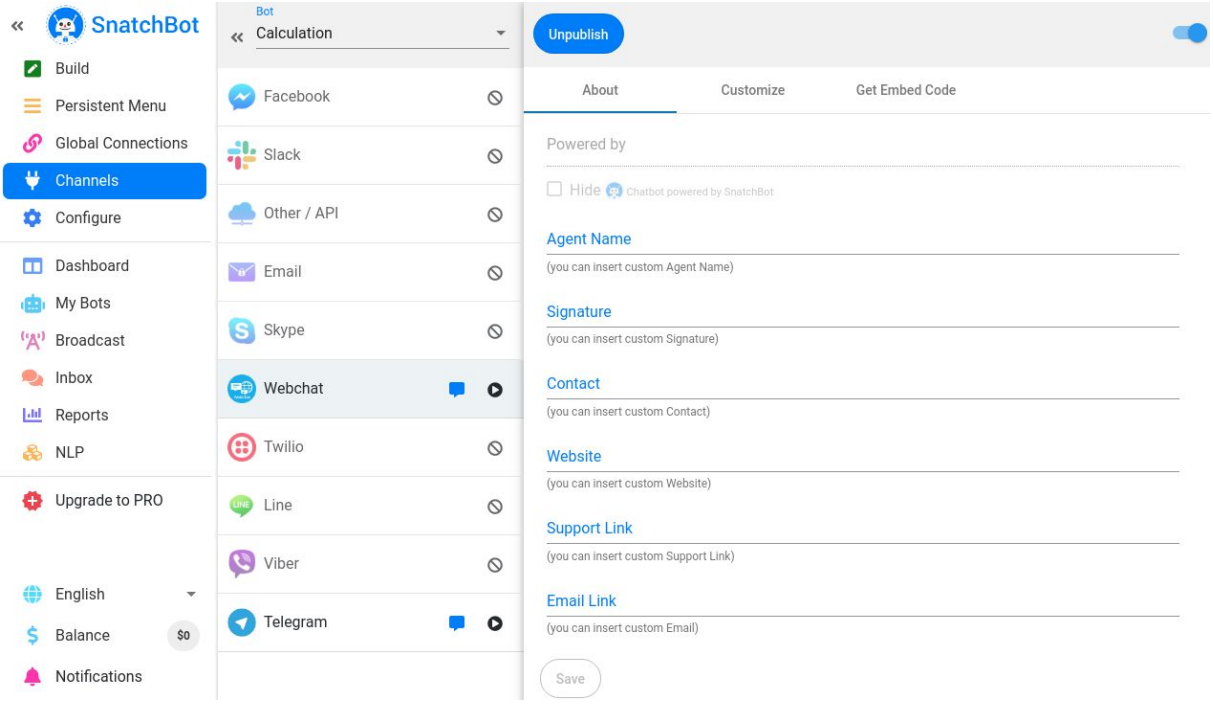
Additionally, SnatchBot has a Bot Directory where bot creators can share their work and be discovered. With over 1,000 user-made chatbots to browse, it's a great place to get inspiration about the possibilities for chatbots and you can filter your searches to focus on the categories that interest you. And if you've built a chatbot on our platform, make sure to add it to the directory, that way it can be found by search engines as well as our users, increasing your traffic.

Chapter 15: Launching your Chatbot on a Website, Facebook Messenger, Telegram and Other Channels

Once you have made a chatbot, you will of course want to make it accessible. Here, working with SnatchBot brings tremendous advantages in comparison to other platforms, because we are omni-channel in the true sense of the term. Our bots are not limited to one platform (like Messenger) but more importantly, you don't have to rebuild your chatbot for every new channel you want to use it on. From the very outset, we designed our platform so as to allow for the one build to be placed on a large and growing range of channels with just a few clicks. Even where enVerprises have developed their own messaging system, we can rapidly integrate our chatbots to it.

Websites

It is straightforward to place your chatbot on a website, click on Channels. Then click on the **Webchat** button.



Next click **Get Embed Code**.

Now choose whether you want the chatbot to automatically begin the conversation when the webpage is loaded or wait until the button (the chatbot's icon) is pressed. To have the chatbot automatically begin, select the 'Allow auto opening' box.

To place the bot as a button on the webpage use option 1. Highlight and copy the code or simply press **COPY.**

Now open your web page and access the HTML. Scroll down to the bottom of the code and paste in your bot.

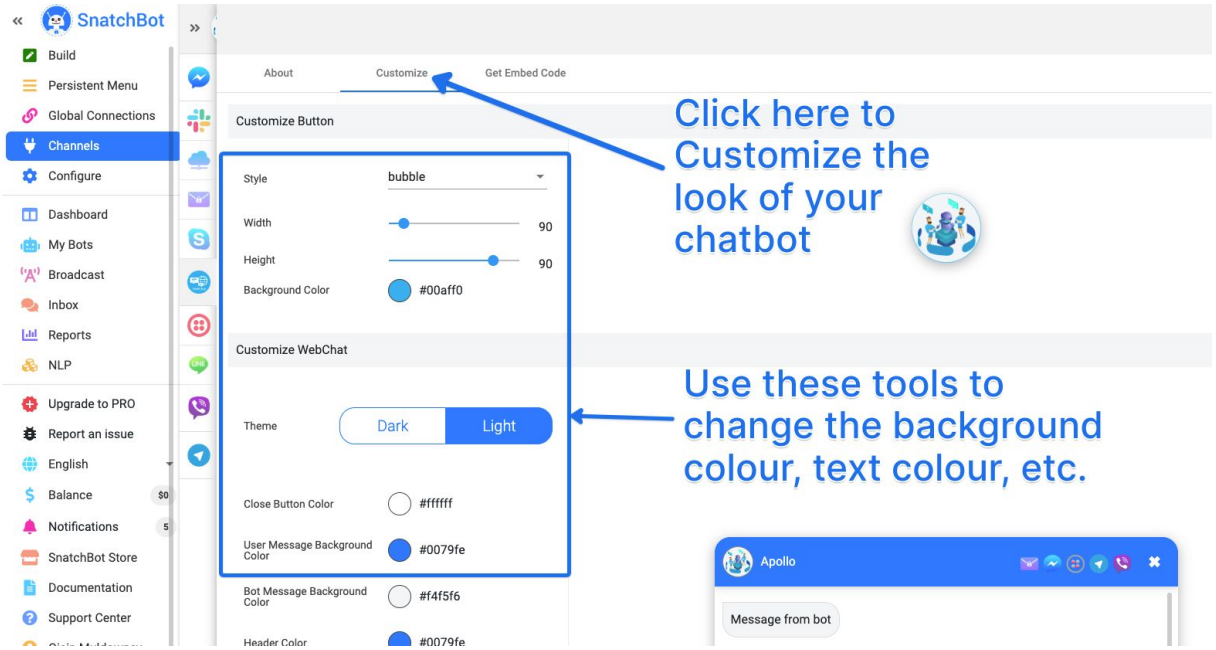
Then update the page and the bot will be available as a button in the bottom right corner.

Do you use a CMS?

Check out this Wix integration tutorial.

It's that simple and that powerful! Now you have a chatbot on your webpage.

There are also some further options available for you to customize your bot and how it looks to the user. Click on Customise Webchat:



You'll also see options to add in Agent Name, Signature, Contact, Website, Support Link and Email Link. But the real power in customization comes with the simple tools that allow you to alter the size, colour scheme, greeting message and more.

These are easy to adjust and allow you to create the exact tone that you want for your chatbot:

The process is the same for WordPress Websites and you can see this in detail here:

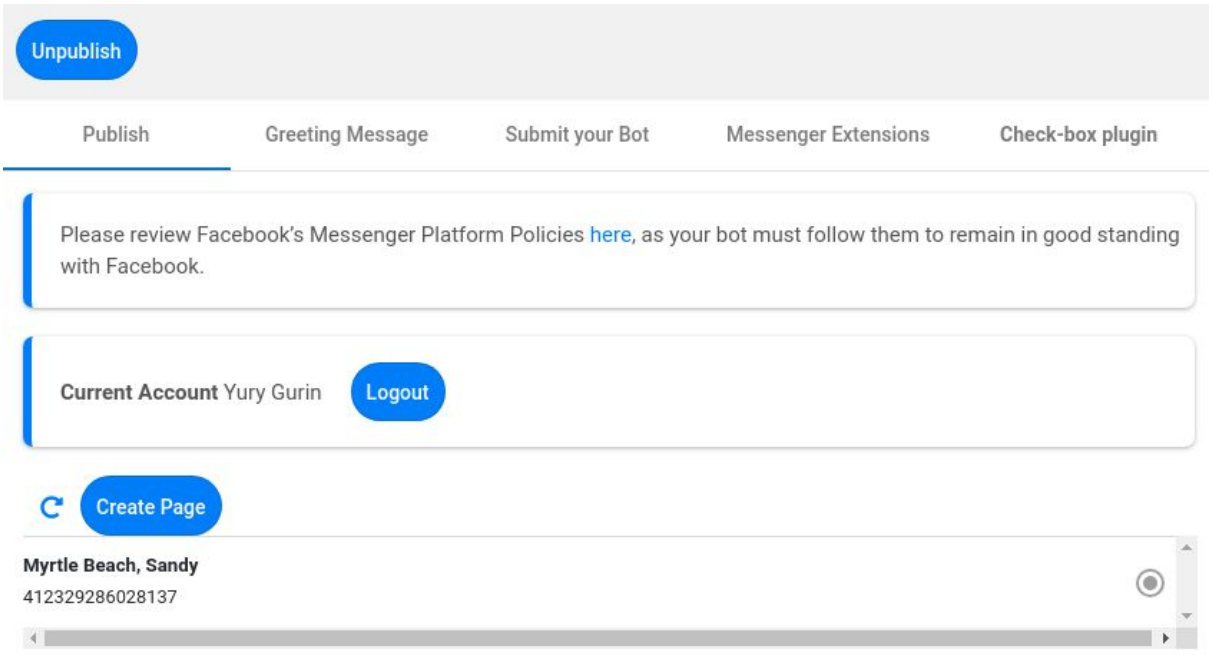
https://support.snatchbot.me/docs/wordpress-website

Facebook Messenger

A very popular channel for chatbots, ever since Facebook made the decision to embrace them, is the Messenger channel. Here's how to add your bot to it.

Open the Channels page. On the nearby panel, you will see a 'Facebook Messenger' option. You will be required to log in to the Facebook if you have not done this already.

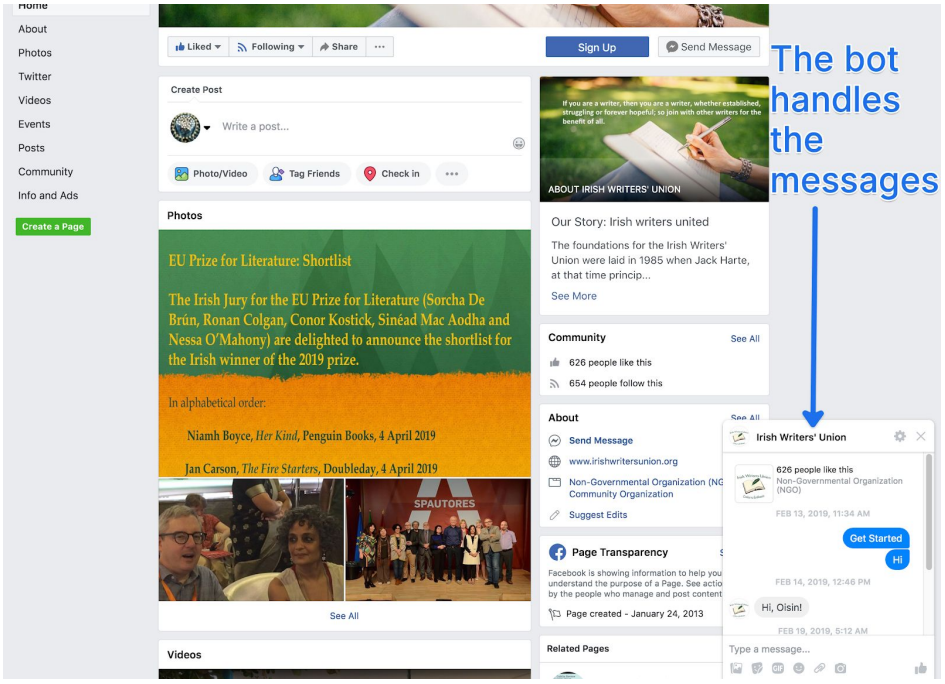
After logging in, you can see a list of the Facebook pages you are managing (or create a new one by simply clicking 'Create Page' button).



Select the page to which you want to deploy the bot – and that's it – the bot is ready for communication in chat. Let's see how it works!

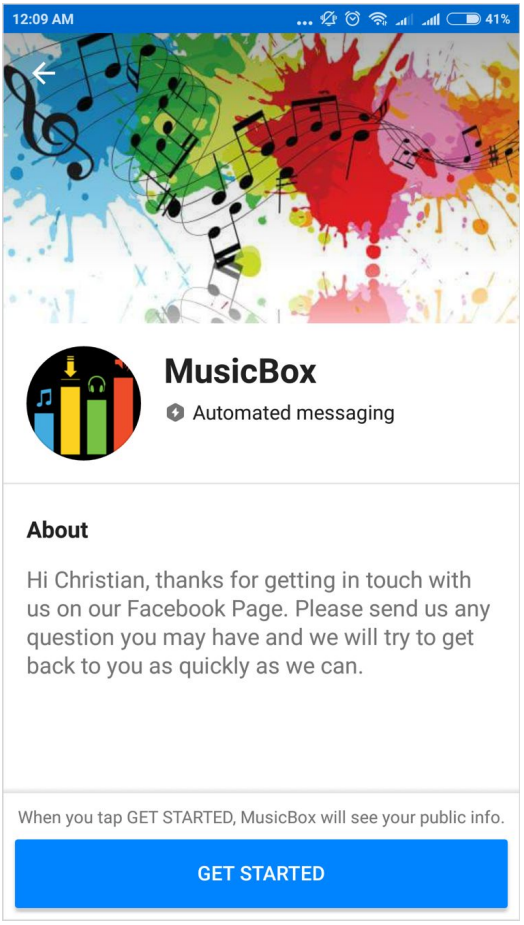
Visiting your page, a user can send a message to the bot:

Depending on the bot's configuration, a conversation will begin:

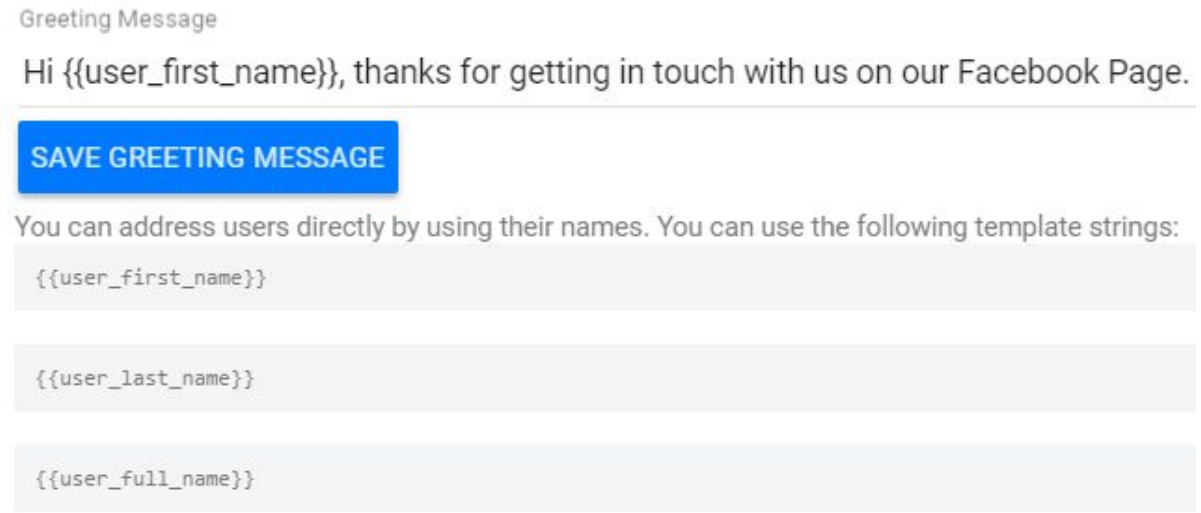


Additionally, you can send anyone you wish the URL so that users can go directly into a Messenger conversation with your bot.

Conversations with chatbots via Facebook's Messenger on smartphones look well:



A greeting message can be configured when editing the channel:



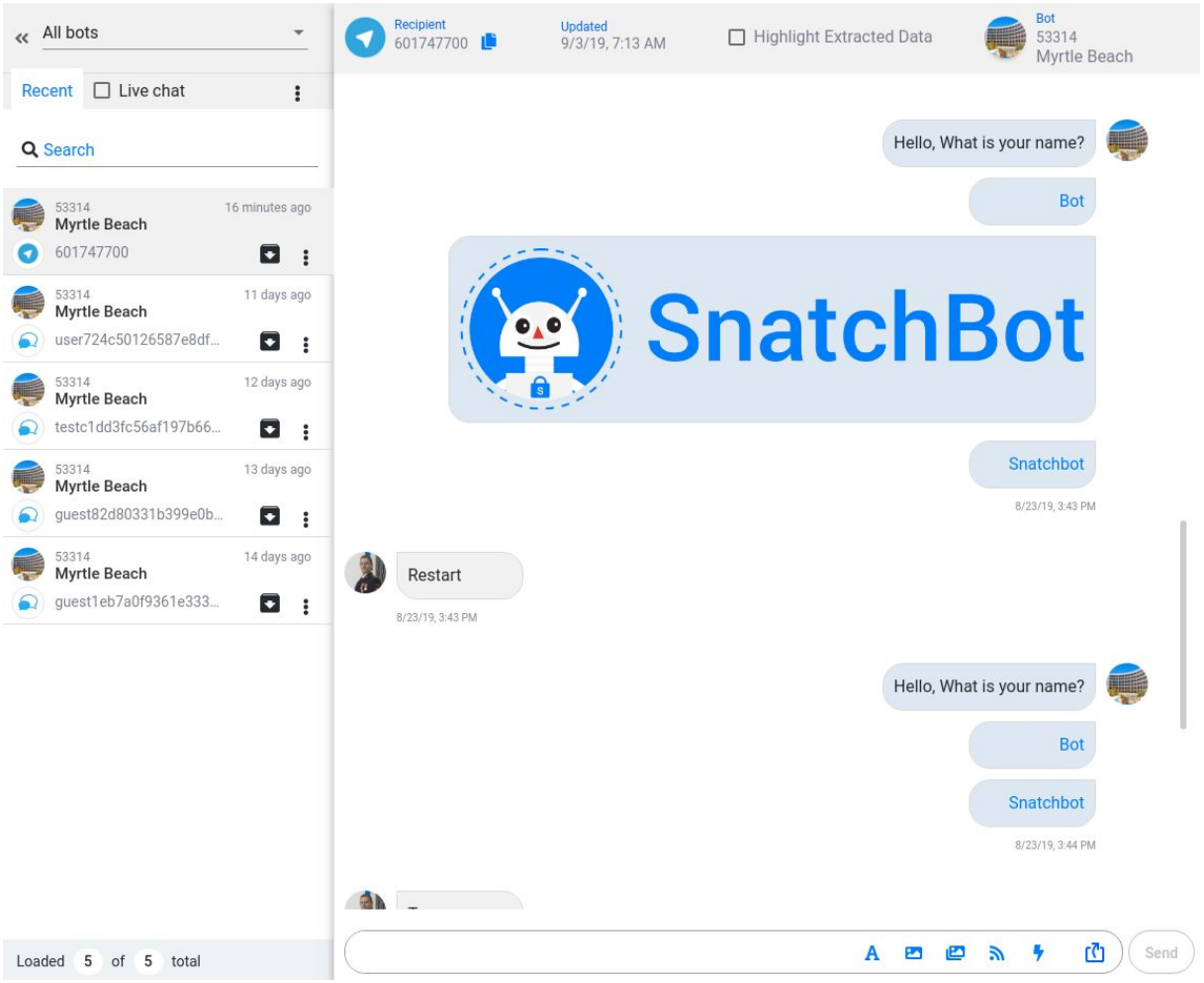
You can decide which tags for addressing the users you will choose and how you would like to greet them.

If you want to add this bot to another page, it's simple to switch by clicking 'Use Page' button when editing the channel:

And that's all there is too it! When you want to disable the chatbot on the Facebook page, edit or delete, please use the actions next to the channel's title.

Telegram

Another popular messaging channel which is enthusiastic about chatbots is Telegram. To place your chatbot on Telegram, go to the **Channels** page, selected from the left-hand column, and click on the **Telegram** option.



Now there are just three very short steps to take. Firstly, log in to your Telegram account. If you don't already have one, you can set Telegram up on your phone very quickly. It is just a case of entering your phone number and then a code that they send you.

The second step is to open Telegram's bot creation menu. Once signed id, follow this link to start a chat with BotFather, which will guide you. This is at https://web.telegram.org/#/im?p=@BotFather. Just click the link we have supplied.

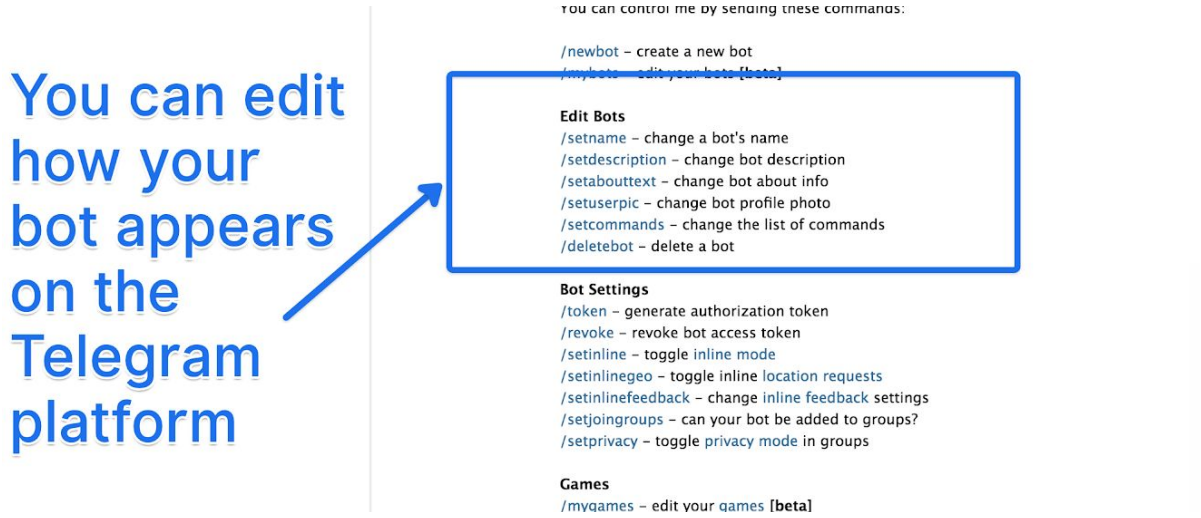
Now in that bot creation menu, type **/start** (or click on the start button), followed by **/newbot**. You will then be invited to give a name to your new chatbot.

Once you have provided a unique name, Telegram issues a token, this is a long string of numbers, characters and symbols.

Copy that token and **paste** it in the line **'Telegram API Token'** back on your SnatchBot channel page.

That's it! The Telegram channel now appears automatically in your live channels list, with switched to on. Your bot is available to Telegram users.

You will want to customise the appearance of your chatbot on Telegram, such as changing the image and description text. It is very straightforward to do so, just use the commands in their bot creation menu.



The other channels available on the SnatchBot platform are all accessed in the same fashion. Start with the Channels page, click on the channel you want to launch the bot on and follow the four or five steps needed to do so.

For more information about the steps to adding your chatbot to other channels please see:

Viber https://support.snatchbot.me/docs/viber

LINE https://support.snatchbot.me/docs/line

Slack https://support.snatchbot.me/docs/slack

Skype https://support.snatchbot.me/docs/skype-messenger

Twilio (SMS exchanges) https://support.snatchbot.me/docs/twilio

Chapter 16: Exporting Data from your Chatbot

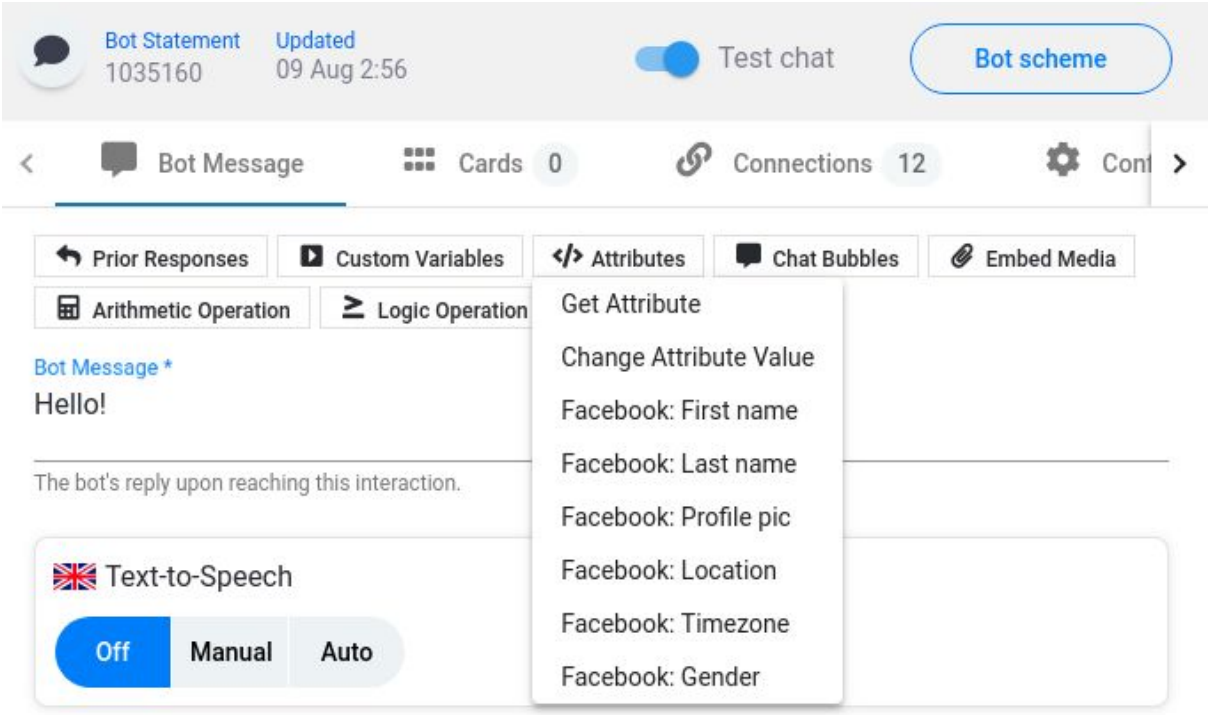
SnatchBot's Reports page has a complete record of all your chatbot's exchanges. It can be filtered in a variety of ways, allowing you to examine your data in whatever fashion suits you best.

This is powerful, but even more so is the automation of the use of the data, for example, sending someone in your team an email with a customer's details and request. Or connecting your data to a CRM system. Or building a database of emails. Or issuing invoices automatically.The possibilities are endless and they don't necessarily need coders and a lengthy period of backend work.

With the SnatchBot platform there are several ways to save user information and export it to an outside app or database easily. Before you start exporting data, you will need to create *attributes*, save user answers within them, and add them to a webhook. We will explain this process in three simple steps.

Step 1: Creating attributes

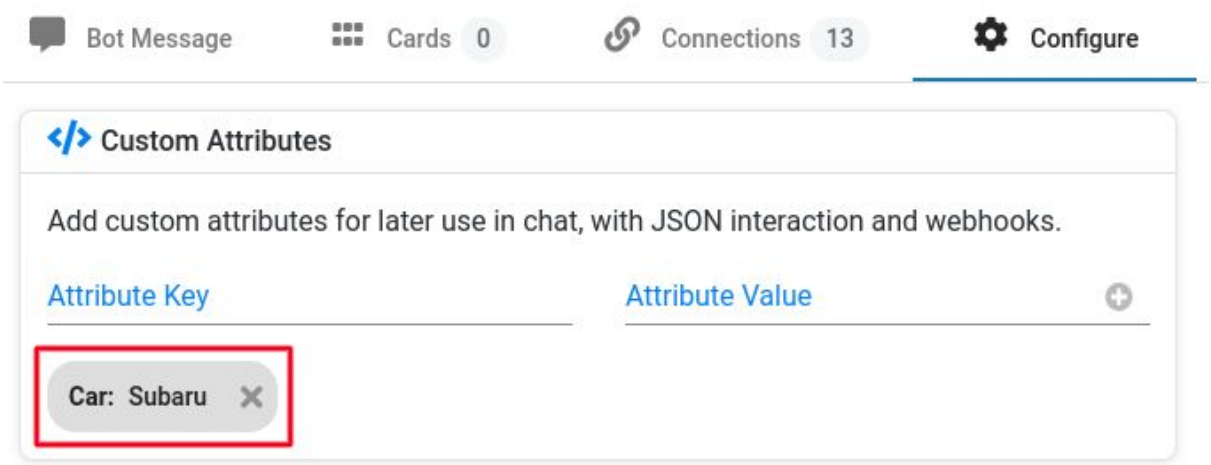
You can create attributes within any interaction. Most people do it in the welcome message. Go to the bottom of the interaction page and select the 'Add Attributes' card. It will open a form with two fields, one for adding the attribute's name and the other for adding its value.



When you give the attribute a name, the attribute value line will appear. Any attribute that won't change during the conversational flow can get its final value at this point. This could be API credentials, company and chatbot info, and other data that is unaffected by a user's answers.

Since the whole point here is to extract user answers and export them to a third-party app, the real power of the attribute is evident when instead of entering a fixed response you allow it to be filled with user-generated data: emails, phone numbers, answers to various questions, quick reply choices, etc.

You can use Custom variables and Attributes in Text Cards and in Gallery Cards:

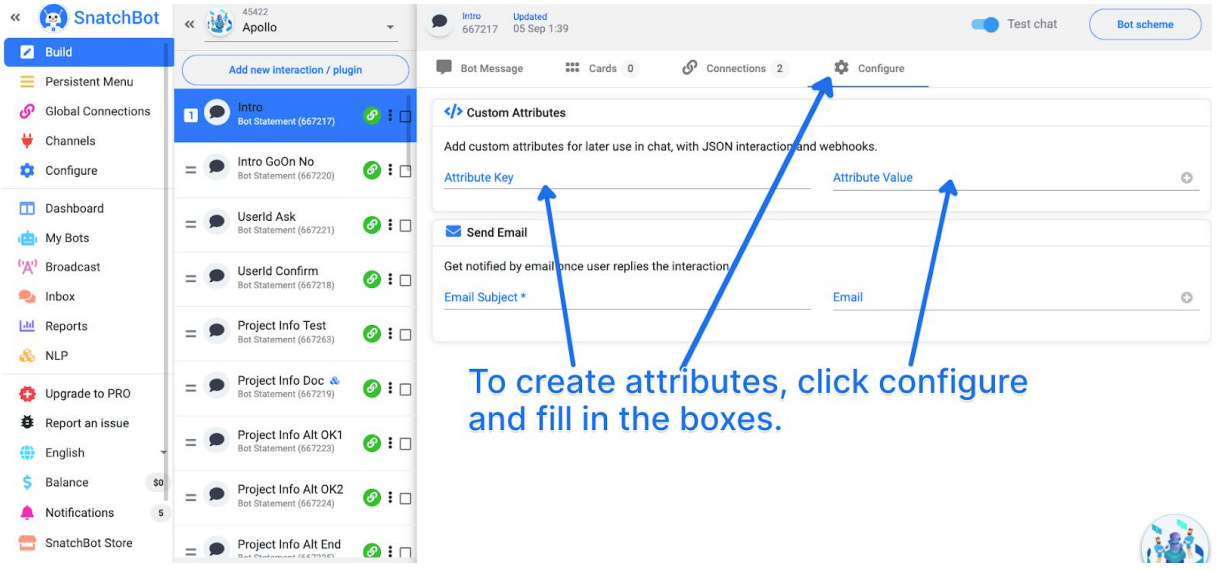


Note: If you plan to deploy your chatbot only to Facebook Messenger, you won't need to create attributes for users' first names, last names, gender, locale (regional settings chosen on the user's Facebook profile), and profile photo URLs. This data is automatically generated by Facebook Messenger, sent to the bot, saved within the appropriate pre-created attribute and you can use or export it at any time.

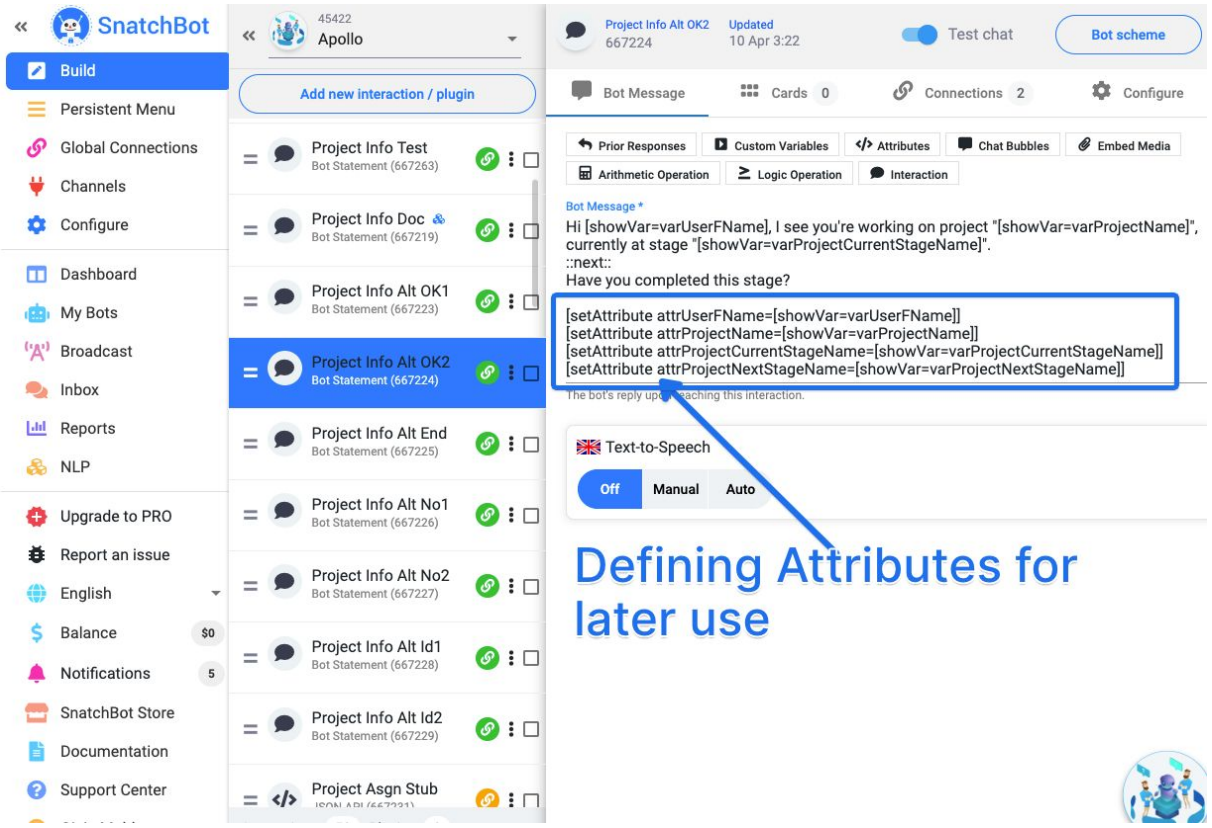
Step 2: Setting attribute values

User-generated data can be placed within the attribute with a simple formula, found in the card menu above the interaction text input box. For pre-configured Facebook Attribute (like name, location, etc) click the **Attributes** button and choose the formula you want to add to the text input field.

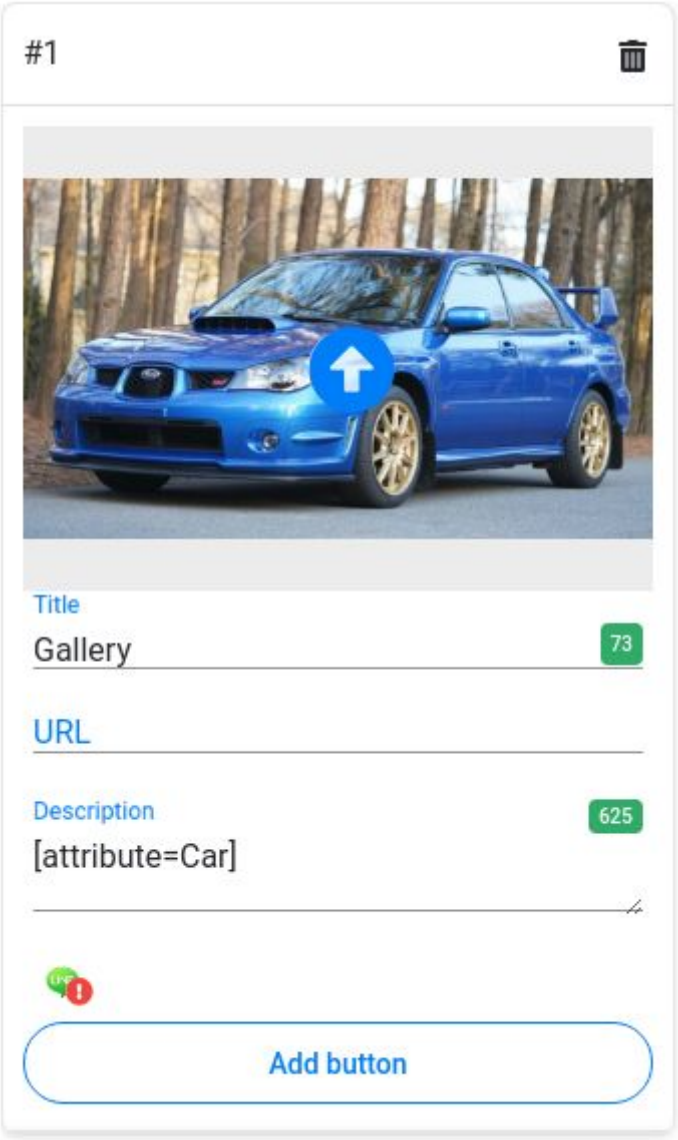
To create your own attributes click **Configure** on the message editing page.



The formula for changing the attribute's value contains the name of the attribute ('KEY'), and the space for adding the new attribute contents ('VALUE'). The 'KEY' word should be replaced with the name of the attribute you want to change (e.g. email), and VALUE with the new value or a formula that recalls some of the previous answers users have left in the conversational flow.



You can use any previous answer by choosing the Prior Responses card from the line above the text input field. If the answer you would like to add was extracted, use the Extracted Data formula, and for all other answers use Response Text. You can put attributes into cards:



Step 3: Export the attributes

Attribute values from your chatbot can be exported in three different ways. You can do this with a regular webhook connection, global webhook, or the use of JSON API interaction. This action will add attributes to the POST request that is sent out from the chatbot to the chosen URL address.

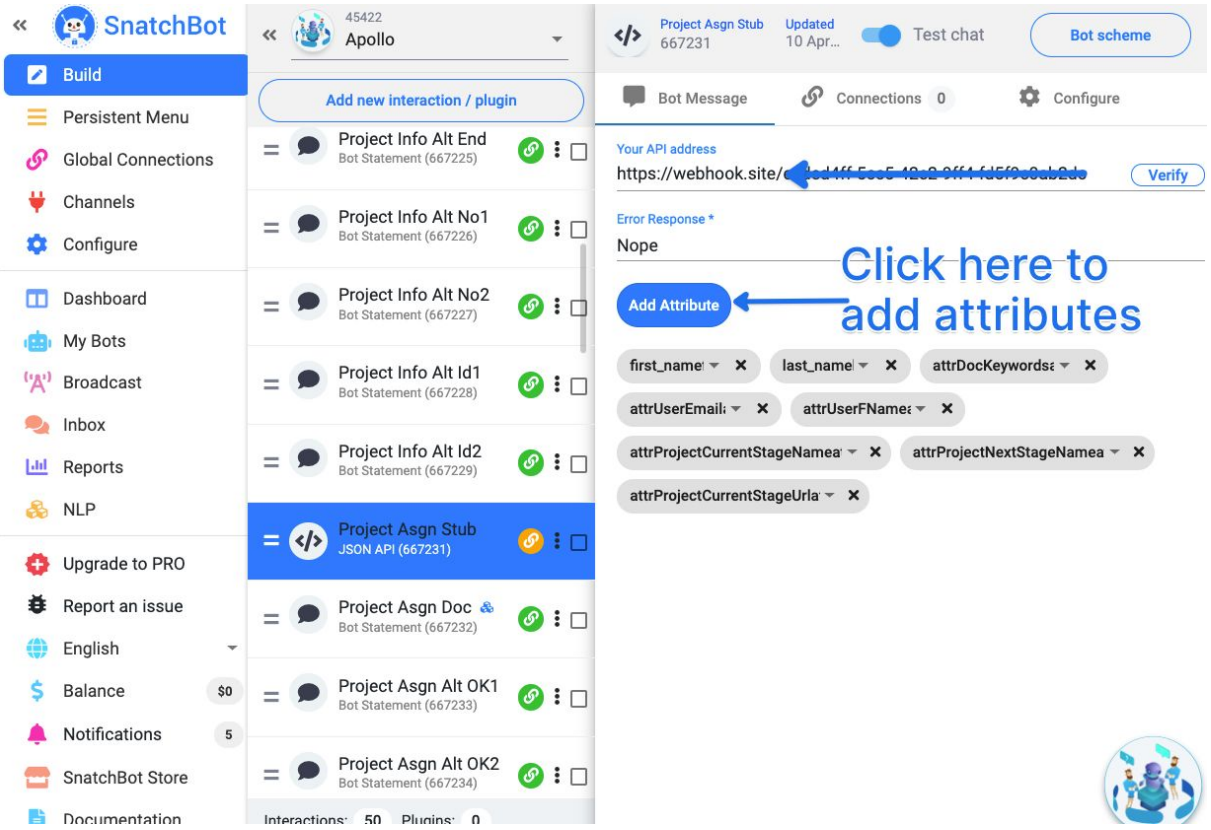
If you would like to create a global webhook, you can add the URL in the Bot settings card on the Configure page. A regular webhook URL can be added to any connection, by clicking on the webhook button on the bottom of the connection card. The JSON API interaction has an input field for adding destination URLs.

A regular webhook is the best option if you don't need to import data from a third party API and show it to the user. If you need some return information, it is necessary to use JSON API, while the global connection is used when you want all user answers to be exported throughout the course of the conversation (one by one).

To include attributes in a request sent by any of these three options, you need to add them manually. You can find the option for adding webhook attributes in the Connection & NLP card. Click on the downward arrow on the right, choose the attribute you would like to add, and click the plus (+) icon on the right.

You can add an unlimited number of attributes to a request, including both custom made ones and attributes that are automatically pulled from Facebook Messenger (if the conversation is taking place on this channel).

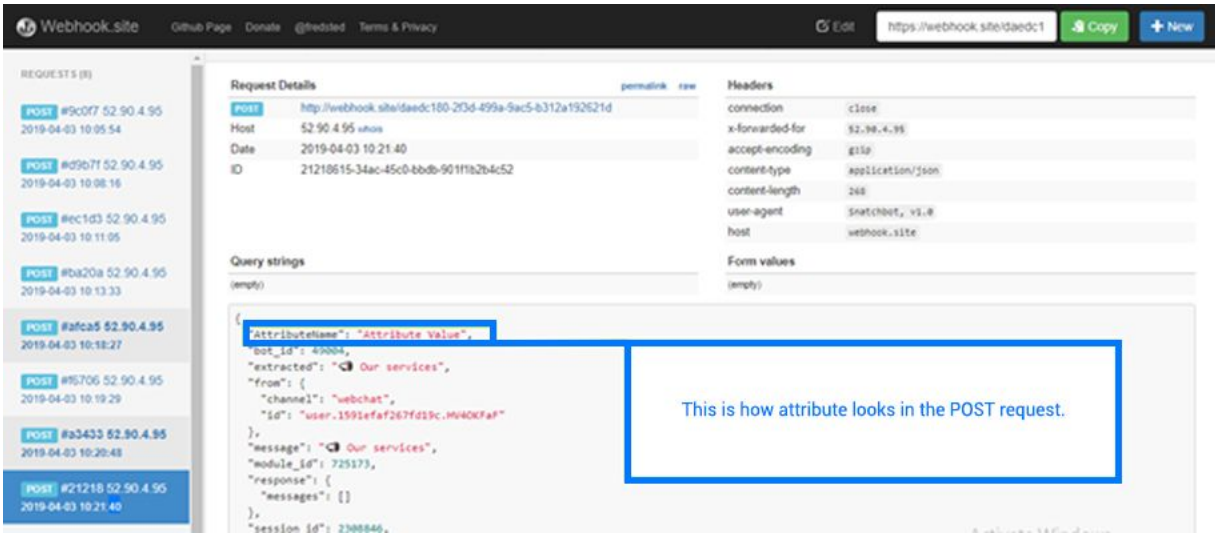
Adding attributes to the JSON API call requires a similar action. After choosing the JSON API type of interaction, beneath the Error Response input box, you will find a blue Add Attribute button. Click on it and choose the attribute you would like to add. To add another attribute, repeat this process.



How to use Exported attributes?

The easiest way to export data is by using Integromat, Zapier or a similar app that can serve as a go-between for delivering data to the desired app or database. Most chatbot builders store exported data in spreadsheets, but this just one of the options.

This is how the exported attribute data looks within the POST request sent from the Snatchbot platform:

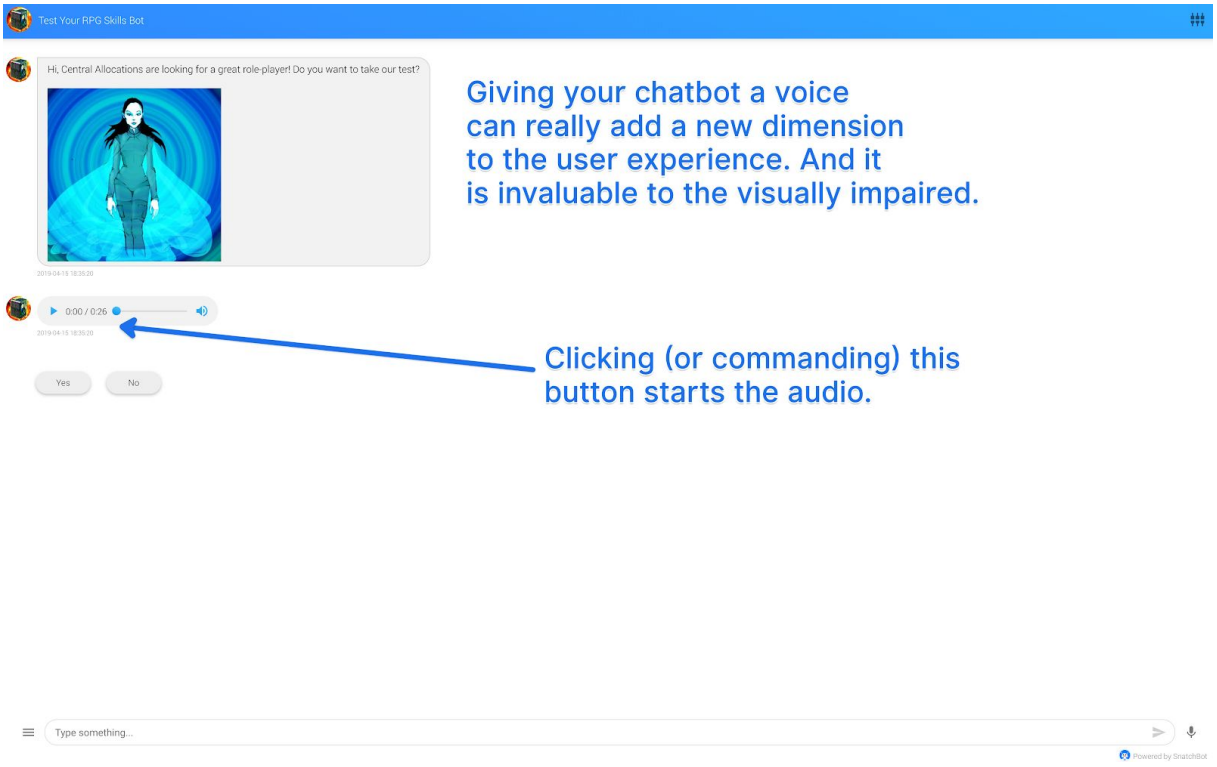


There are many other ways in which you can use the exported data. If delivered to a CRM, the chatbot user data can provide you with precious insights about your customers, leads, and prospects, and allow you to create buying personas and organize more efficient marketing campaigns in the future.

Chapter 17: Text-to-Speech

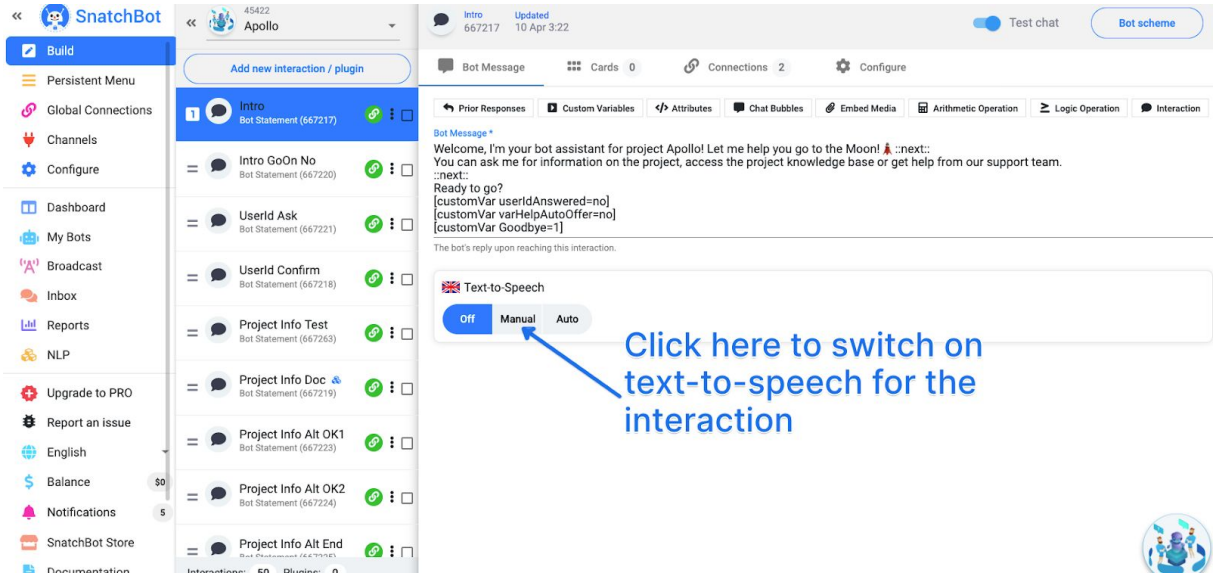
For a whole new dimension in the user experience, you can provide the option of listening to an audio version of the chatbot's messages. This is obviously an important accessibility option to provide for users with a visual impairment, but it is a feature that all users may wish to engage with and one that can help bring personality to your chatbot.

For every interaction that you want to apply it to, the Text-to-Speech feature generates an audio file which the user can listen to in any of the supported channels.

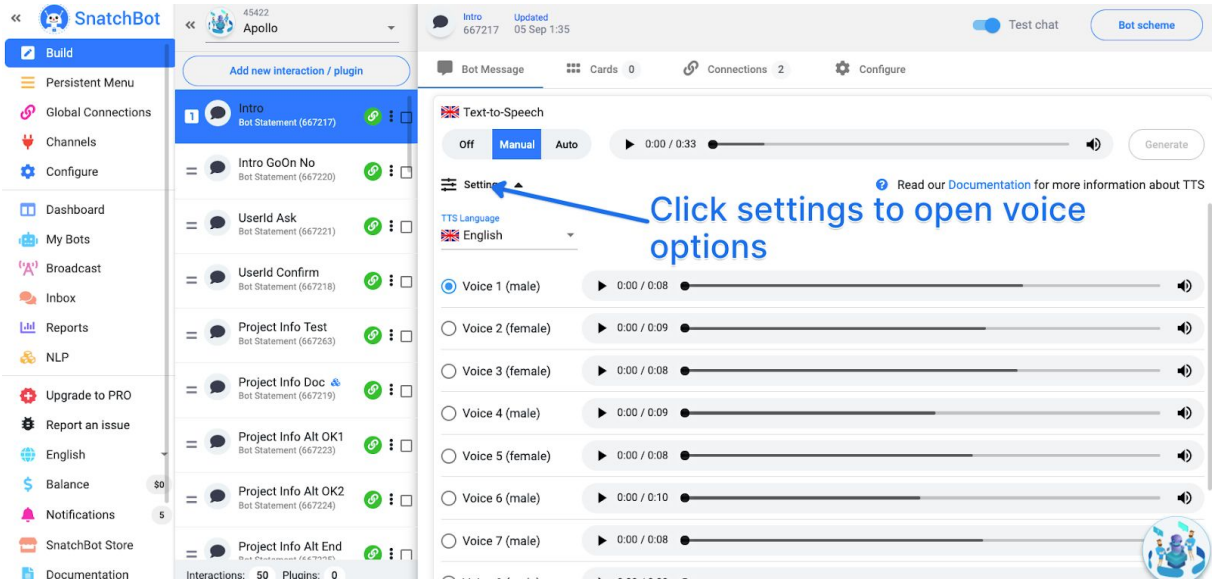


How to enable Text-to-Speech in your bot

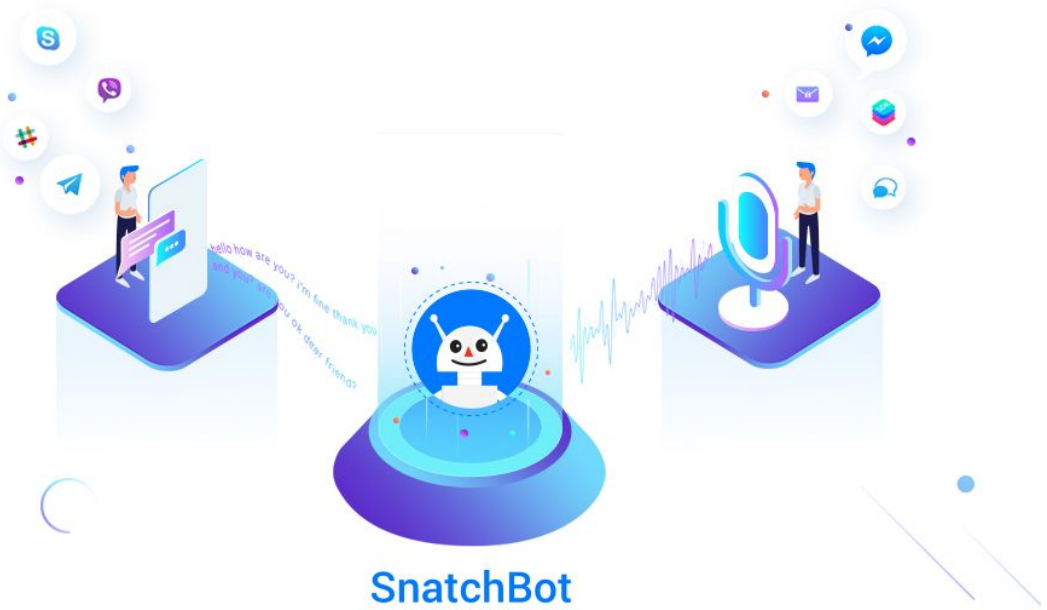
It's very simple, just click the switch on the message editing page.



You can choose your language and preferred voice by clicking settings.

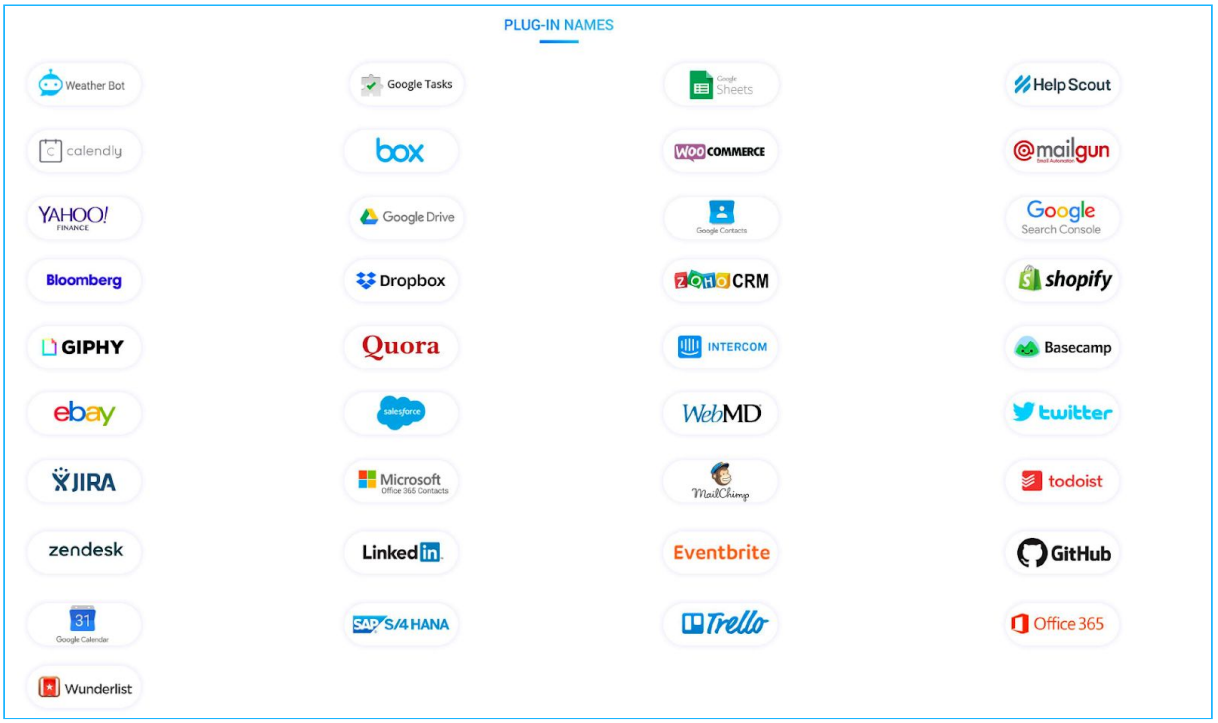


You also have the option of downloading the audio file. With just a few clicks, you've given a powerful extra dimension to your chatbot. Adding a voice means bringing a dramatic enhancement to your chatbot's personality and for visually impaired users it is invaluable.

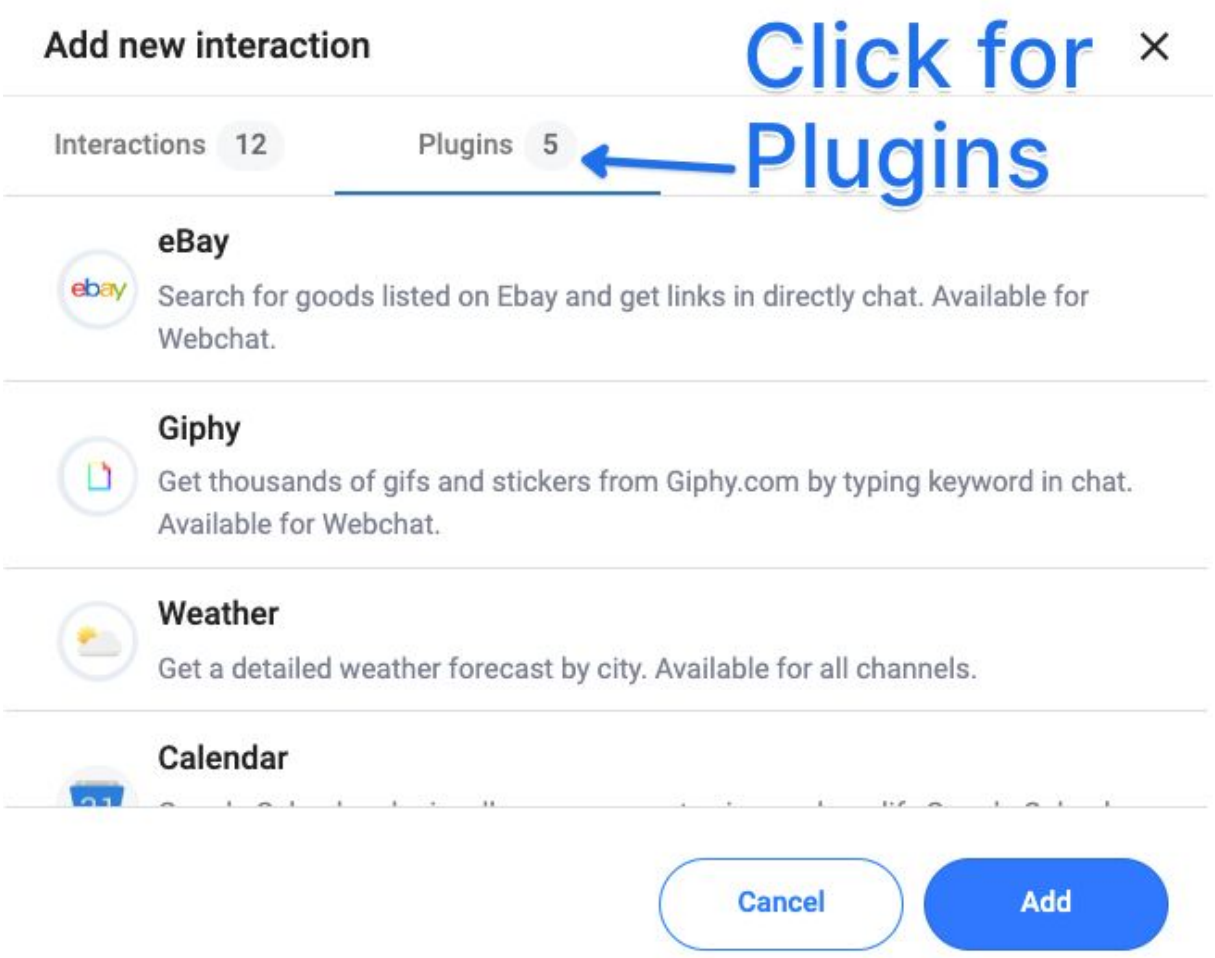


Chapter 18: Plugins

As a part of its easy to use approach to the automation of digital processes the SnatchBot platform is designed to support hundreds of integrations in the form of ready to use plugins. Plugins can be added to the bot structure in order to synchronize the chatbot with popular software services. We have a roadmap to provide our chatbot owners with immediate integration with services such as WooCommerce, Salesforce, Trello, to name a few.



A plugin at SnatchBot is basically a set of interactions that realize the functionality of a certain service provider's API. Instead of you having to do some coding work to integrate your chatbot with these services, we've done that for you. All you have to do is choose a new interaction and click to add a plugin.



Plugins give SnatchBot users tremendous value from the synergy between chatbots and the most popular software services.

Examples of plugins: a weather plugin providing weather forecasts; a Jira plugin allowing the user to operate with Jira tasks via a bot; Google Calendar, for viewing and adding calendar events.

There are two ways to apply plugins to a chatbot: via creation by the SnatchBot team or creation by the chatbot owner, following the instructions of an official plugins API.

User plugins have to be verified and approved by a SnatchBot administrator to make sure they execute useful functionality and are designed correctly. In case there is a mistake in a user's plugin, the SnatchBot administrator has an option to decline the plugin with customized feedback to guide the user in correcting the plugin structure so that it can be re-submitted again.

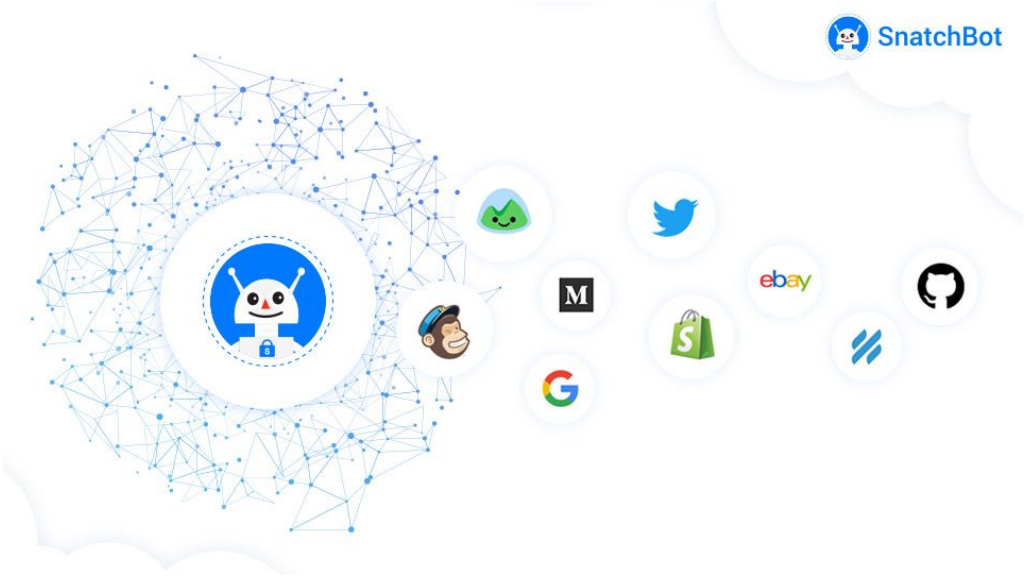
This path leads to the creation of a large user community, who build plugins and increase the options available to SnatchBot users.
There are three types of plugins:

Free plugins accessible for all users/bots
Pro plugins available for Pro bots only. When a bot has Pro status terminated, the functionality of all Pro plugins used inside the bot will be suspended.

Custom subscription plugins. These type of plugins will require a custom subscription independent of a bot's free or Pro status. There will be a plugins store section where a user will be able to add plugins to a cart.

Every plugin is assigned to a certain language. If an administrator/user wants to translate it to another language, he or she can clone it and translate all the text contents of the cloned plugin to another language.

A plugin can be updated with a new version number assigned. When a new version of a plugin is released, a user who has already added the previous version will get a notification and will be able to update the plugin. Any customization, however, that the user has implemented into the plugin will be reset after the update.



Chapter 19: Building NLP Models on the SnatchBot Platform

There is a huge difference in experience for the user talking to a chatbot that simply provides buttons or scripted responses and one that allows the user to speak freely and understands what he or she is saying. That difference is down to the use of NLP. Only chatbots with powerful NLP engines can hope to make sense of the complexities of the human language and here at SnatchBot we are very proud of ours. Moreover, it is available in 135 languages.

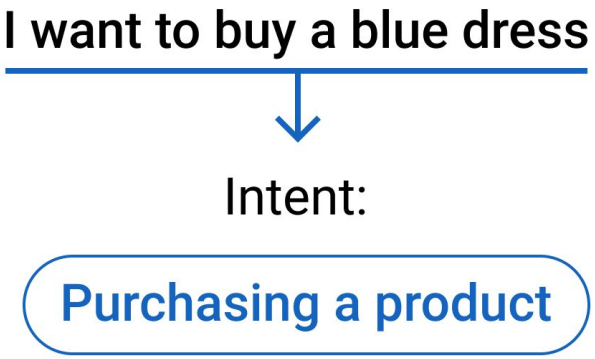
NLP is at the cutting edge of what artificial intelligence can achieve and understandably, the idea of using it can seem daunting. But as with our platform generally, we've done all the hard work below the surface and have developed a very intuitive interface to allow anyone at all to create their own NLP models. Please try it! Creating NLP models is a lot easier than you think and once you have mastered it, you can enormously enrich the appeal and effectiveness of your chatbots.
Every NLP model that you build (and there are no limits) is available to all your chatbots.

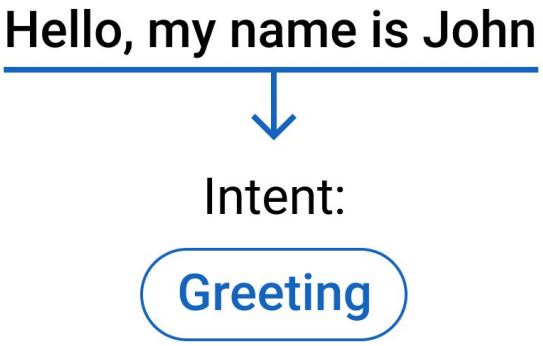
Overview

In order for your chatbot to break down a sentence to get to the meaning of it, we have to consider the essential parts of the sentence. One useful way that the wider community of researchers into Artificial Intelligence do this is to distinguish between Entities and Intent. We also follow this helpful approach.

An *Entity* in a sentence is an object in the real world that can be named. So people, places, organisations, times etc. For example, in the sentence: My sister went on holiday to New York in 2017, the Entities are sister (person), New York (place) and 2017 (time).

Our NLP models are excellent at identifying Entities and can do so with near human accuracy.
Intent in a sentence is the purpose or goal of the statement. In a sentence of the type, I would like to purchase a year's membership or I would like to book an appointment it is easy to identify the Intent, namely to purchase and to make a booking respectively. Many sentences, however, do not have a clear Intent. So it is more challenging for a chatbot to recognise Intent but again, our NLP models are very effective at it.





Note: It is not necessary to know this to produce clever, NLP-enabled chatbots, but the curious or more technical chatbot builder might be interested to learn how we solve problem of recognizing Intent. We apply the Bernoulli Naive Bayes algorithm to the user's text. The advantage of this algorithm is that it can be trained to deliver great results very quickly. There are other approaches, but they take much more investment in training the model before becoming effective.

To make NLP work for your particular goals, you will need to define all the types of Entities and Intents you want the bot to recognise. In other words, you will create several NLP models, one for every Entity or Intent you need your chatbot to be able to identify.

You can build as many NLP models as you like on our platform. So, for example, you might build an NLP Intent model so that the bot can identify when the user wishes to make a purchase. And an Entity model which recognises locations and another that recognises ages. Your chatbots can then utilise all three to offer the user a purchase from a selection that takes into account the age and location of the customer.

On our platform, you don't need to build a new NLP model for each new bot that you create. All of your chatbots will have the option of accessing each of the NLP models you have trained and we'll demonstrate how to add the model to the conversation below.

Training

If you are creating an NLP model from scratch, it will be very basic at first. You will need to provide lots of examples (we use the term samples) of sentences manually, along with information about what Entities are in the sentence or what the Intent is. Obviously, the more examples the NLP model has to draw on, the better. It will be more accurate. Intent requires an even wider amount of samples to operate and provide your users with accurate results, but if configured properly, will work like a charm.

Something that people tend to neglect is the usefulness of entering 'false' sentences as samples.

Suppose you want to create an intent model with the goal of detecting that a student wants to submit work. You will have added 'true' samples along the following lines:

I want to submit my essay.
Essay submission.
Essay hand in.
Can I turn in my essay this way?
Etc.
Adding the following samples as 'false' would teach the model that there is more to determining truth in a sentence than the word 'essay' (and 'turn'). The model will then develop a more sophisticated rule involving the combination of words.

Can you show me an example essay?
Is it my turn to read an essay this week?

To develop your NLP model over time, so that it becomes more and more accurate at solving the task you want it to address, you will want the chatbot to learn, especially from its mistakes. Machine Learning is a hot topic in the search for true Artificial Intelligence.

Our models embody Machine Learning in the sense that on the basis of your having provided example sentences and their outcomes, the model will make decisions about new sentences it encounters and these will provide data from which the model can be revised. While it is possible to automate the process, using criteria such as the conversation not reaching certain interactions, we recommend you adopt an approach known as 'supervised Machine Learning'.

In the light of data from your conversations (and note, you can avail of Google's Chatbase analytics to assist with this), you can spot where the chatbot needs more training and input the problematic sentences you have identified, along with the correct result that the bot should have arrived at when examining the sentence. This supervised Machine Learning will result in a higher rate of success for the next round of conversation. This process of cycling between your supervision and retraining the model will eventually result in a highly refined and successful model.

Pre-Trained Models

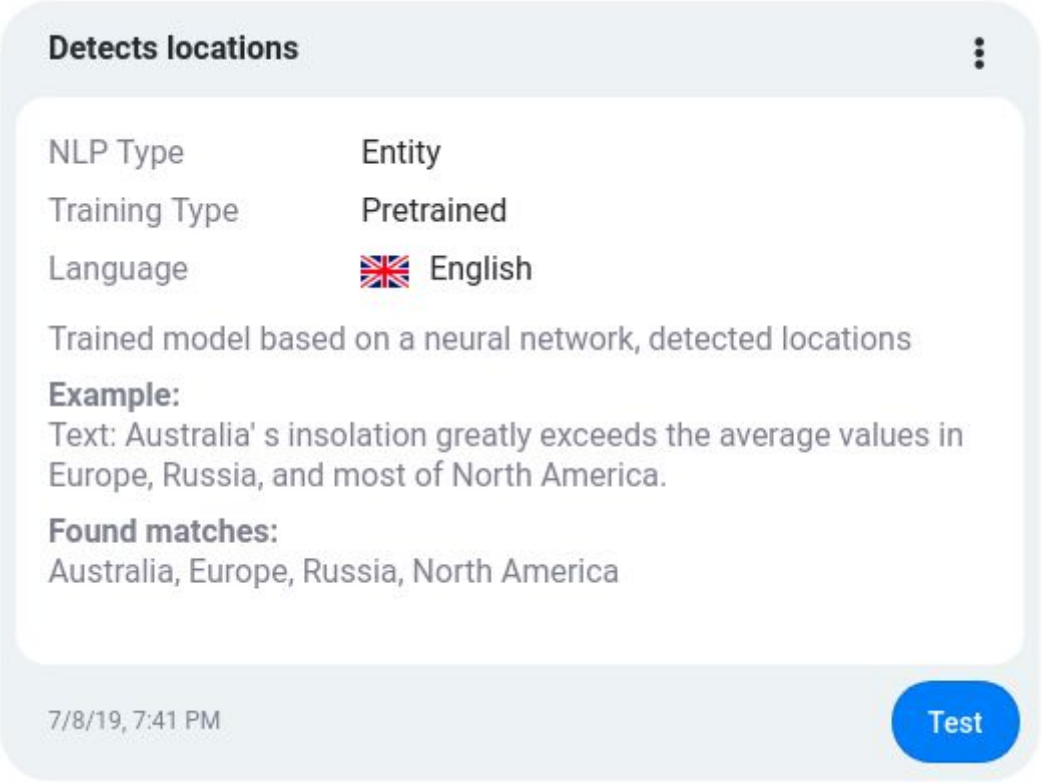
The great news is that we provide pre-trained NLP models. These are state-of-the-art Entity seeking models, which have been trained against massive datasets of sentences. They really are effective and highly recommended. If you have a good use for them the pre-trained models are the way to go.

The Entities that your pre-trained NLP model can identify are people (we provide four different models for recognising people, trained in different ways e.g. on different data sets or using neural networks, you can try them out to see which works best for your purposes); places; dates; money; percentages; times and miscellaneous nouns. We also have pre-trained NLP models for recognising negative and positive Entities.

This is crucial for sentiment analysis. If you want your chatbot to be sensitive to expressions of emotion from the user, then deploying these models will allow the bot to adjust the conversation according to whether it identifies enthusiasm or discontent in the user's responses.

These Pre-trained models can be tested, but they cannot be edited.

Your first steps in using NLP should be to avail of the Pre-trained models. They are free after all and drawn from enormous datasets that would take you weeks to create if you were starting from scratch. From within the NLP page (chosen from the left hand menu) click on the grey term, 'Pre-trained models'.



To build your own NLP models click Create new model to begin. This will open the next window. There are two types of NLP models you can build: entity and intent.

Entity models have two training types:

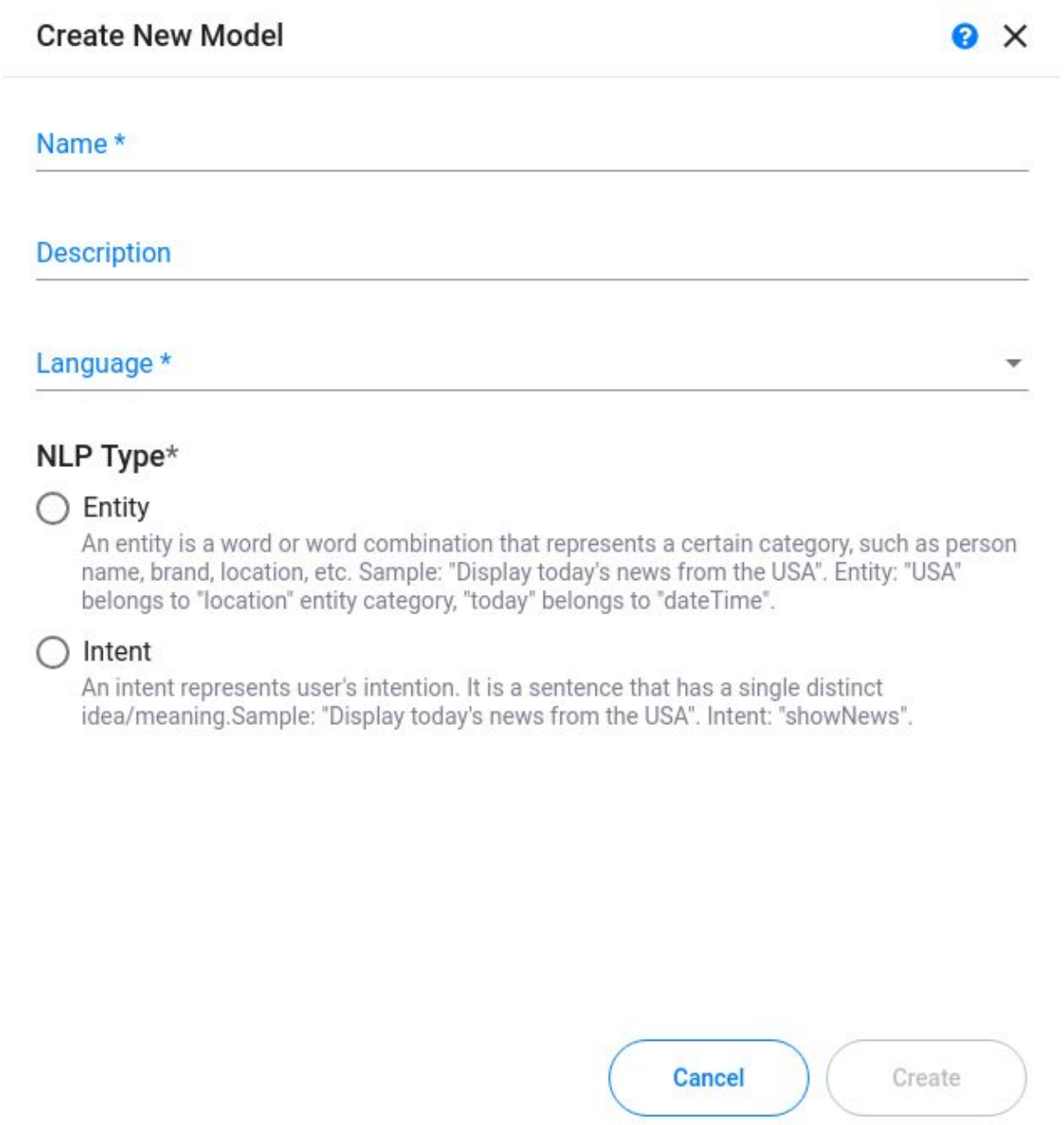
List
A LIST entity is a simple type of model and Is best for an NLP model with a small number of samples. It represents a fixed set of related words in your system, like a list of synonyms. Each list entity may have one or more forms. They are best used when the chatbot needs to identify a term which is a variation on other ways of expressing the same concept. List entities don't have to be labeled in samples or trained by the system. A “list” entity is an explicitly specified list of values.

Conditional Random Field
CRF training is best used for a chatbot with a large number of samples, both in regard to intents or very large numbers of entities. It is more sophisticated type of training that takes the context of the sentence into account, in which the words are highlighted and a large amount of data is required for a successful model.

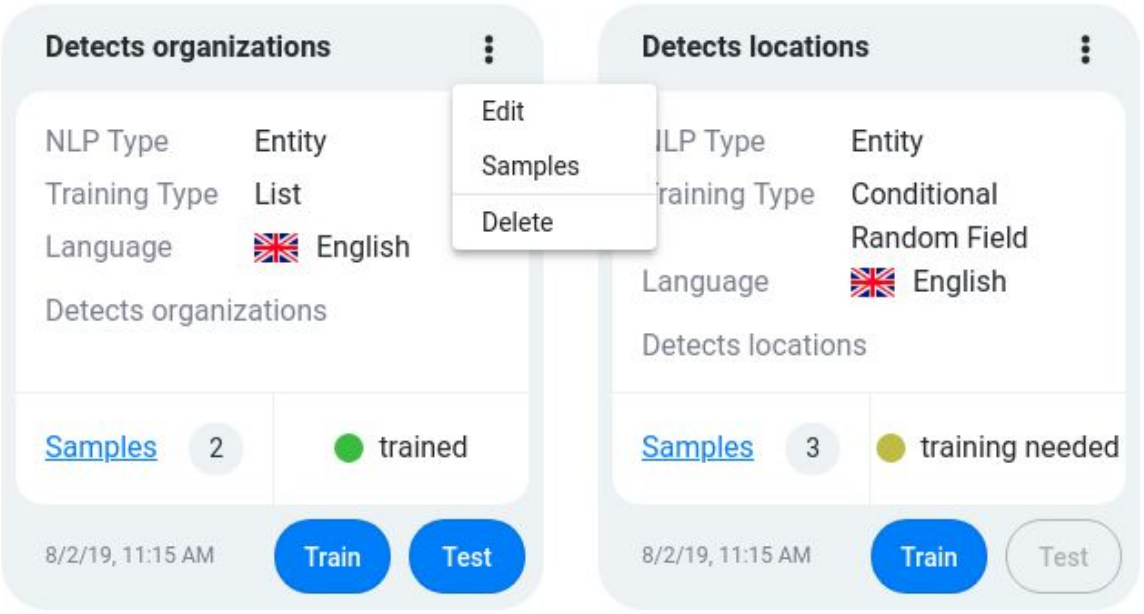
Intent models have one training type:

Bernoulli Naive Bayes model
The Bernoulli Naive Bayes model takes into consideration the context of each word in order to classify words into groups. It works effectively when a large number of samples is uploaded for model training.

To get started on your NLP model, give it a name (min 6 chars), description (optional), select a language, NLP and training type. Press **create**.



The new model will appear in the “custom models” tab:



The card of the model contains the following data:

- Model name
- NLP type
- Training type
- Model language
- Model description
- Number of samples
- Training status (No sample, training needed, training, trained, error)
- Creation time and date

Next, the status of the model could be that of one of the following five conditions:

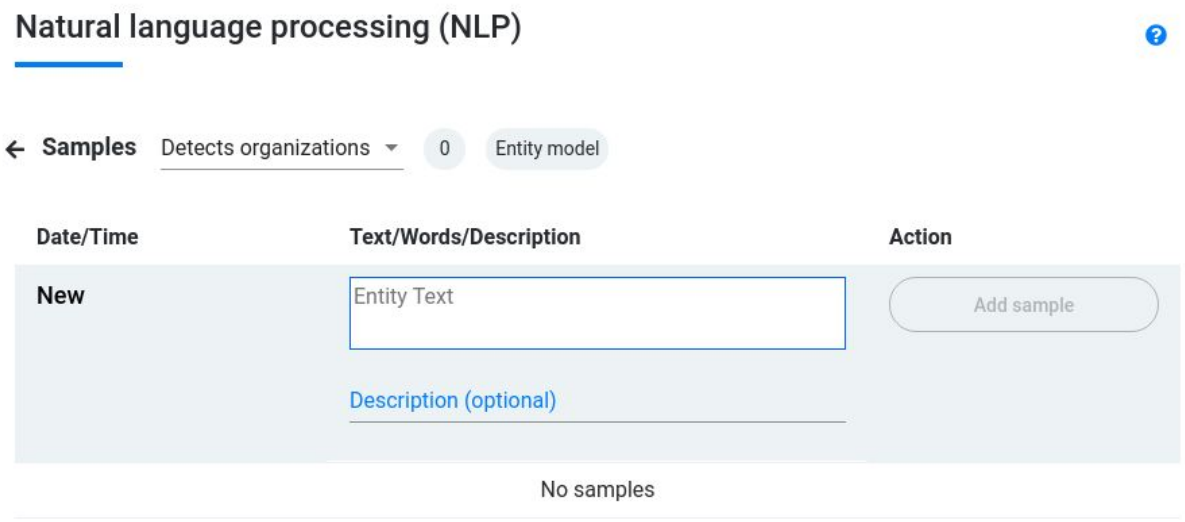
- No Samples
- Training needed
- Training
- Trained
- Error

Additional Options (three dots)
This button opens a pop up window, containing the following buttons:

- Edit - opens an edit window: you can edit the name and description only
- Samples - opens a window containing model samples
- Delete - deletes the model

Entity Models

To create an entity model you need to add some samples for it to understand that they form a group:



You can switch between models, using the drop-down menu. You can see the type of model and number of samples next to the model name.

First, you have to fill the “entity text” field. The entered text will be duplicated in the box below.
Next, you have to highlight words or sentences in the box (by double-clicking or dragging your mouse over the words to be highlighted). This highlighted text will appear in a second box. Press the ‘add’ button to add this word or phrase into sample. Press ‘add sample’ to save the sample. You can add as many samples as you want.

You can edit or delete a sample.

For example, if you are building an entity model to detect food and you expect to encounter sentences like: “I want to order pizza and chips” then type that sentence into the new box. Then double click “pizza” and press Add. Next double click “chips” and press Add. Finally, click Add Sample. You can repeat this operation with dozens of sentences, or you could import (e.g. via copy and paste) a whole menu and individually select all the items and add them so the one sample works to inform the NLP model of many of the foods it will need to recognise. The latter approach is quicker than entering one sentence at a time, but the effectiveness of the model is the same.

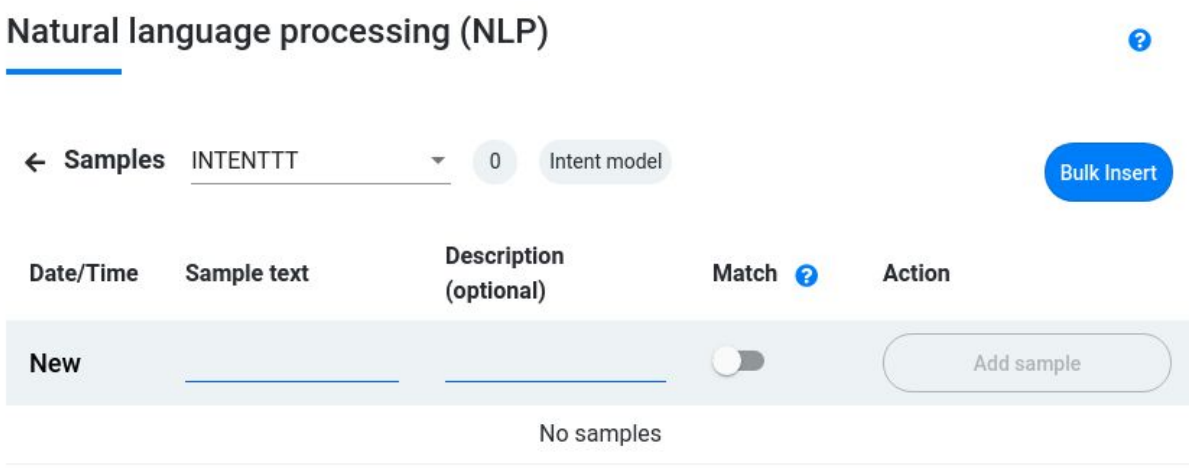
Intent Model

This model is designed to detect intents from user messages, for example to buy a ticket or book a hotel.

The model based on an algorithm and probability theory. The probability of a true or false outcome depends on the number of samples in the model, on the ratio of true/false samples and on the number of matching characters in a sample.

For the best results, you have to create as many samples in the model as you can and if you can give opposite examples using similar words, that will really help the effectiveness of the model. For example, if the model is instructed that, “I want to fly to New York” is true. It will help the accuracy of the model if it also is given the sentence “I saw a huge fly in New York” as false.

To start with, you need to add some samples. You can do this manually or insert large numbers of samples at one time (each sample should start from a new line):

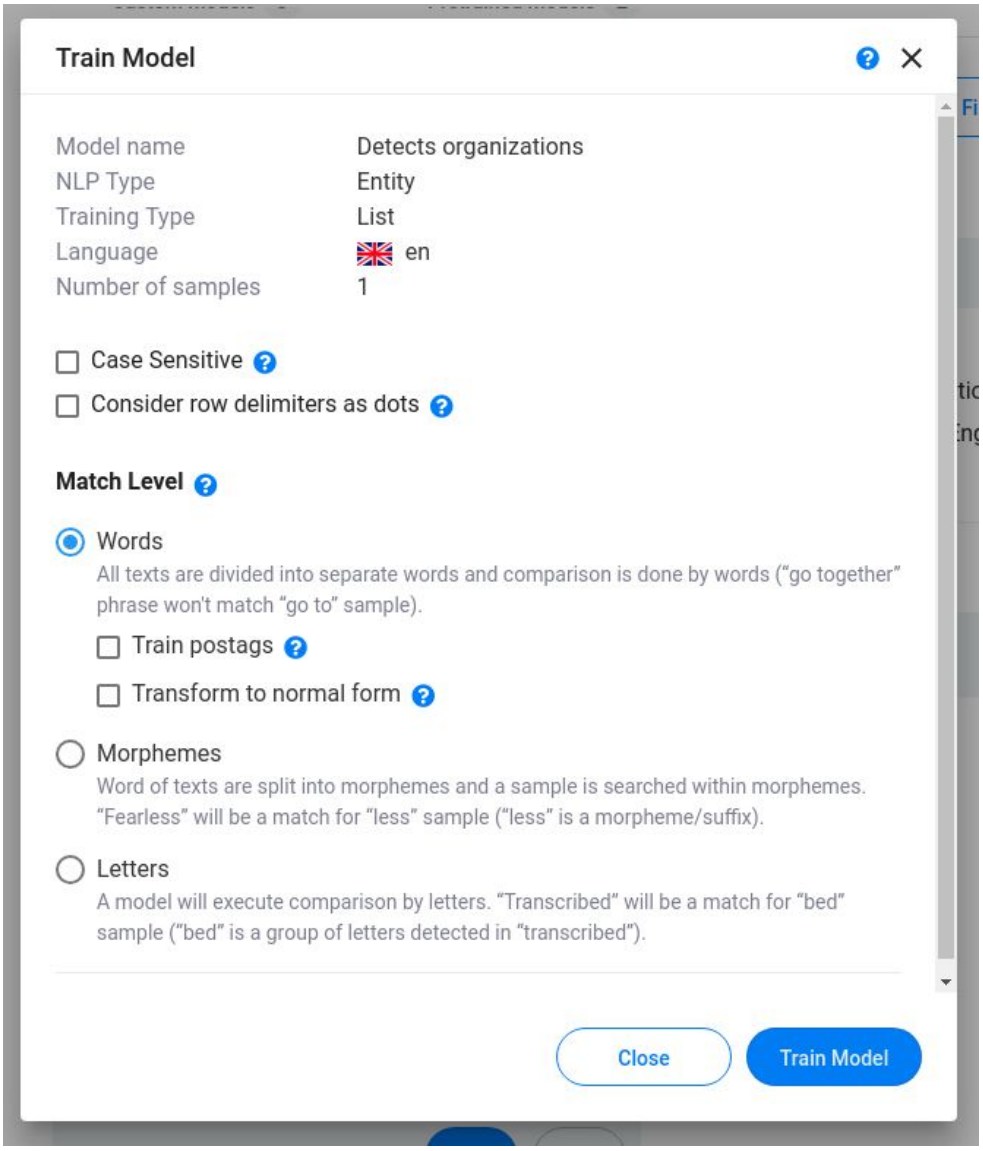


Enter the sample text, you can add a description for your own benefit (it does not affect the model) then use the Match button to indicate if the sample is true or false. Make sure to have a high proportion of false sentences and not just enter true ones. Then click Add sample.

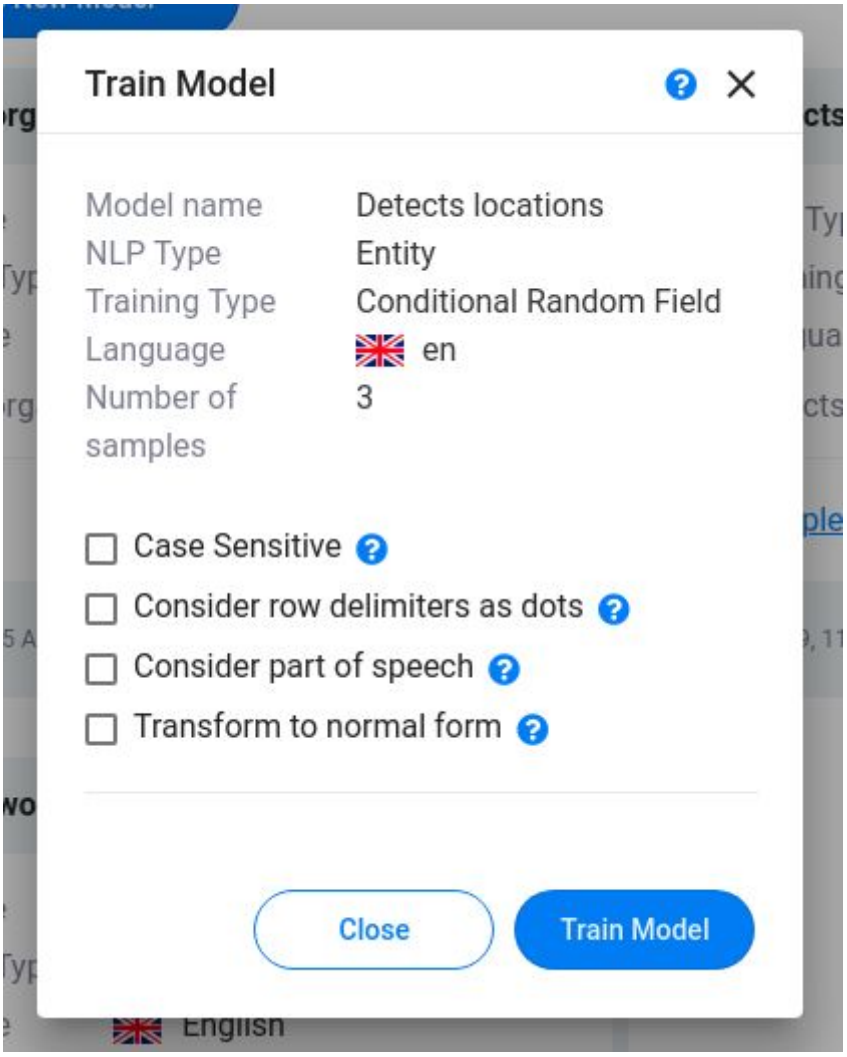
Training

Next, you have to train the model. Go back to the models page and train the button on the card of the model. Training settings are different for each type of models and each type of training.

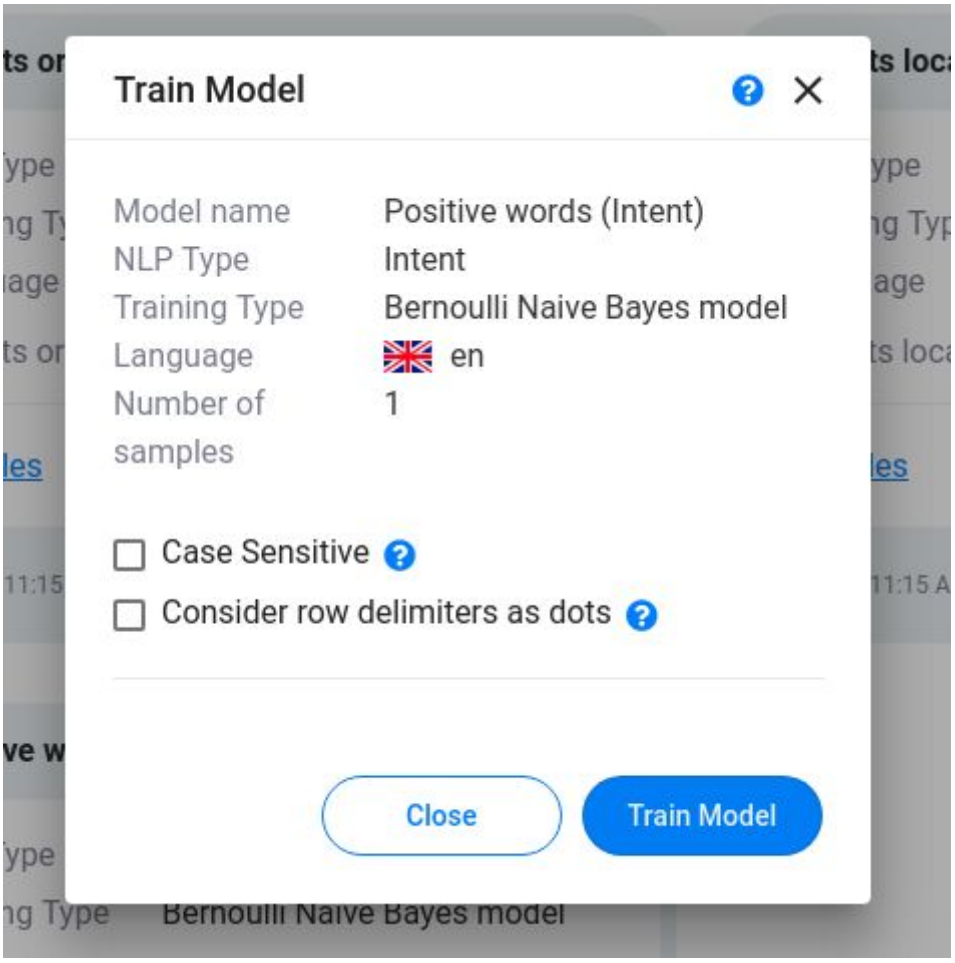
Training settings for Entity - List:



Training settings for Entity - Conditional Random Field:



Training settings for Intent - Bernoulli Naive Bayes model:



Available settings:
Case Sensitive - turns on/off case sensitivity.
Match level (for Entity models only)

Words
The whole text is divided into separate words and a comparison carried out, word by word, for exact matches. For example, the text “go together” won't match with a sample that was “go to”.
In order to get a “true” result for a particular word, before beginning the training of the model, you have to have included this word in a sample, highlighted it and added it to the sample. If you have not added it, then match result will be “false”. You can highlight just a part of the word, providing that is unique to that word.

i. Consider part of speech (Train Postags). If you click this on, the model will take into account where the word appears in the context of the sentence. This is useful when you want to distinguish between two different meanings of the same word. Provided you trained the phrase, “the bark of the dog” the model will find this true and not find “the bark of the tree” true.

ii Transform to normal form. If you click this on, the model will transform all words of both samples and message texts to “normal form” before comparing them. This is an algebraic approach that means the model is likely to find as true words that share the same root.

Morphemes
The whole text is divided into separate words and the words are considered as morphemes (the

smallest meaningful portion of a word). Thus “incoming” will be taken to consist of “in”, “com” and “ing”. These morphemes will be matched so if “incoming” is true, then “insight”, “comfort” and “flying” are also true.

Letters

The model will examine words to see if a group of letters defined as a sample can be found within them. So if the sample “bed” is true, then the words “transcribed” and “robbed” “are true, since “bed” can be found within them.

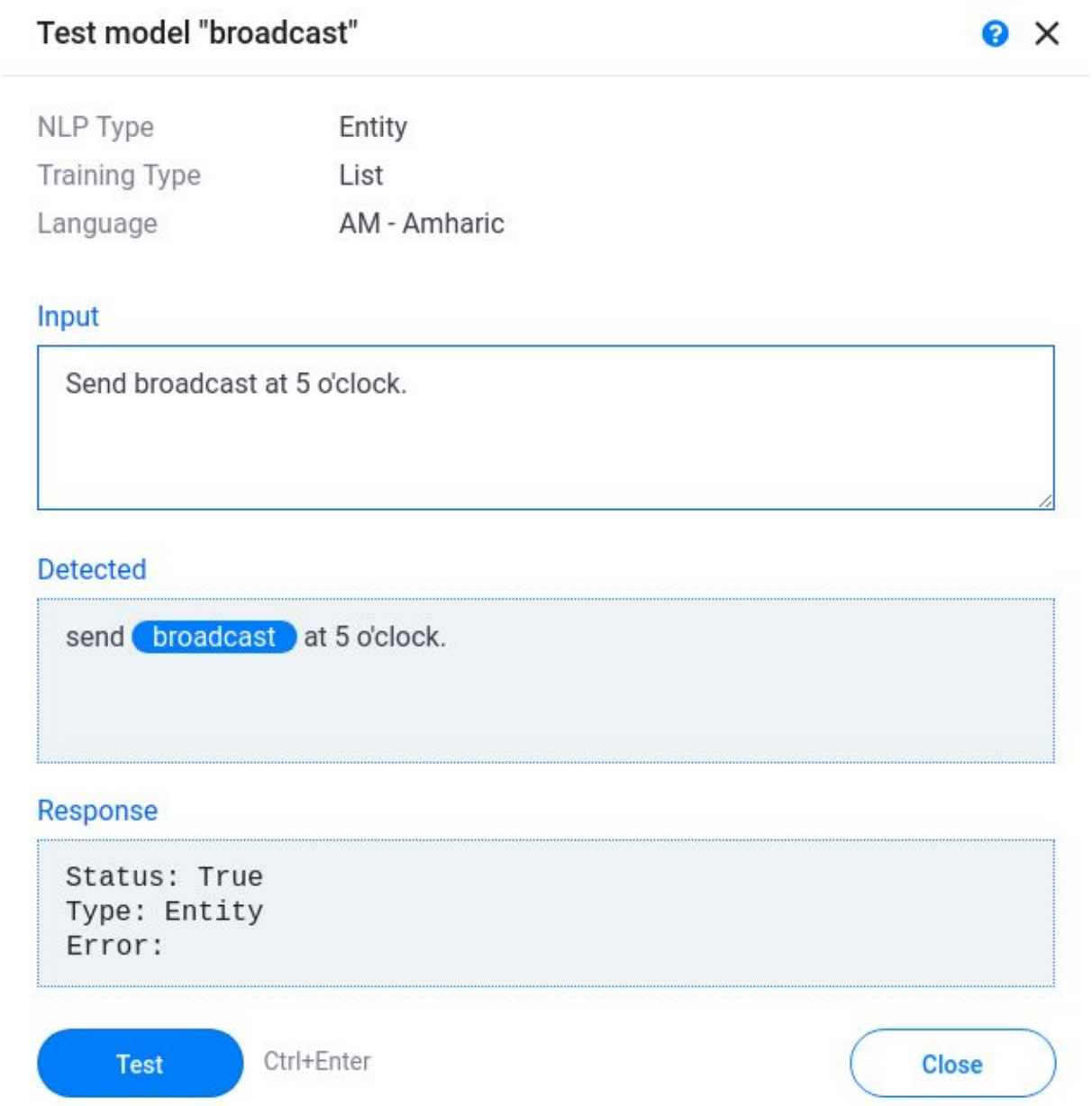
Testing

The final step before using your NLP model is to test it.

There are two results you can obtain from testing a model: true or false. The subsequent direction of the conversation depends on this result.

If the tested text (or any part) matches with the settings of a model, then result will be true; otherwise, false. In the “Detected” field, the sample that was identified will be highlighted.

To test a model enter a sentence in the input field and press Test.



Detected

In the “Detected” field you will see your sentence. If a part of that text matches with the samples of the NLP model you are testing, then the relevant parts of the text will be highlighted. If there are no matches, you will see your text without any highlighting.

Response

Status - status of testing (True / False). If model matches the status is true; otherwise, false.

Type - whether the model being tested was an Entity or Intent one.

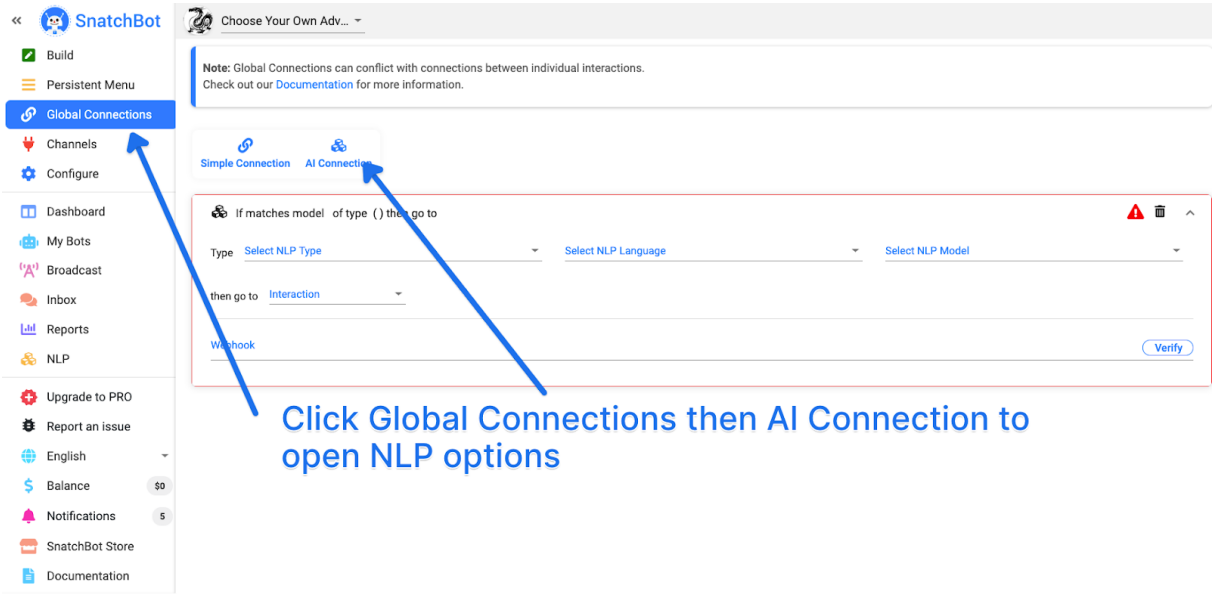
Error - in the event that the test sentence produced an error, you will see it flagged here.

Chapter 20: Applying your NLP Models to Chatbot Conversations

Once you've created your NLP models, it's really straightforward to apply them to your chatbots' conversations.

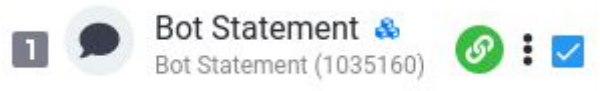
You can add NLP to individual connections within the conversation or to the entire conversation via Global Connections.

Let's take Global Connections as an example. Global Connections are connections that apply to every interaction. Having clicked the Global Connections click AI Connection to open up all the NLP options.



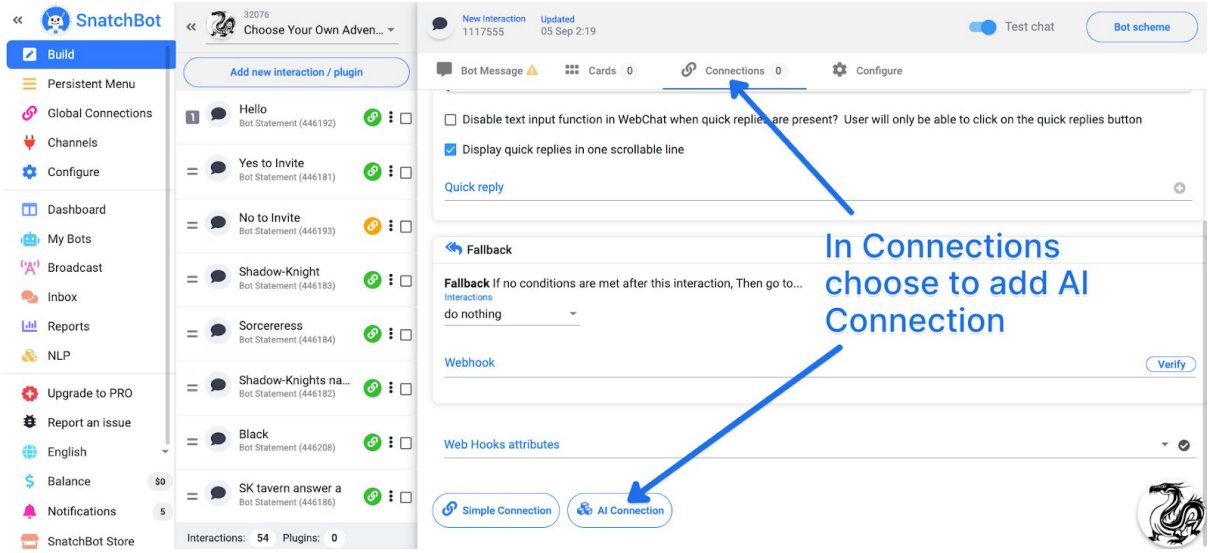
From the drop down menu, choose the model and how you want it to apply.

Interactions with NLP connections are marked with special blue symbol:

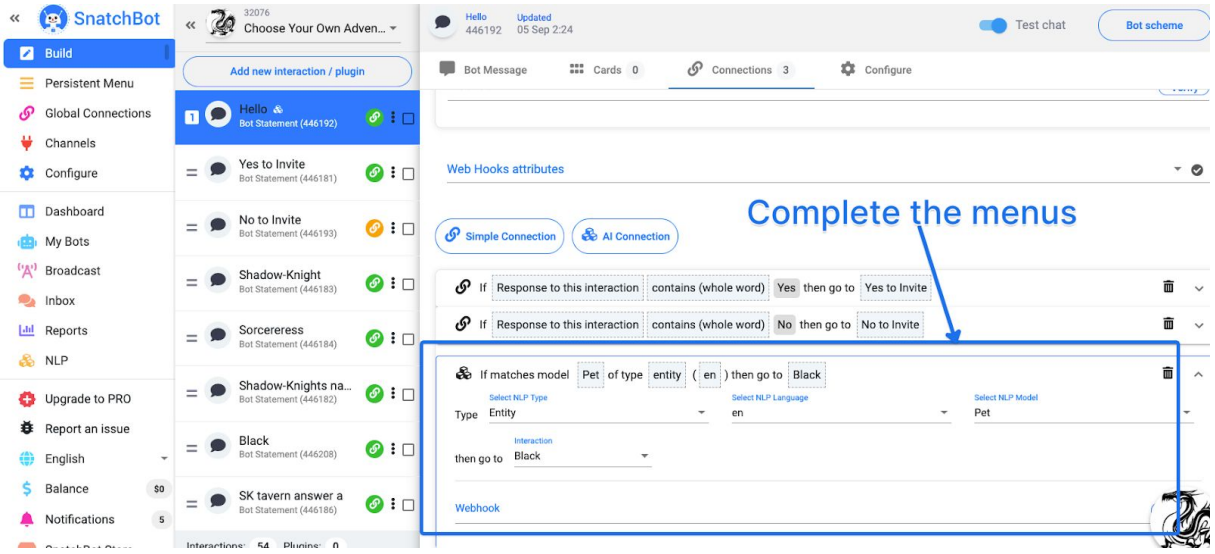


Note, as always with connections, it is a good idea to have created the interactions that you want to go to before creating the connection. That way, it will appear among the options in the drop down 'go to' menu.

Let's take another example, this time applying NLP to an individual interaction. In your message editor, go to Connections and choose the AI connection.



From the resulting menus you pick either an Entity Model or an Intent one and in the next drop down menu you'll be given the option of choosing a model from the NLP models that you have trained.



In this case, an NLP model for Entities called Pet is applied to the user's answer and if True, the conversation moves to the interaction Black.

Note that this model is only applied to the user's input to this particular interaction, if you wanted to apply Intent Cheat to the whole conversation, you would create a Global Connection.

That's it. Now you know how to apply NLP models, you can do so as often as you need them. You can have as many NLP Connections per interaction as you like. With our platform it really is simple to add powerful NLP features to make your chatbot capable of sophisticated, freeform conversations.

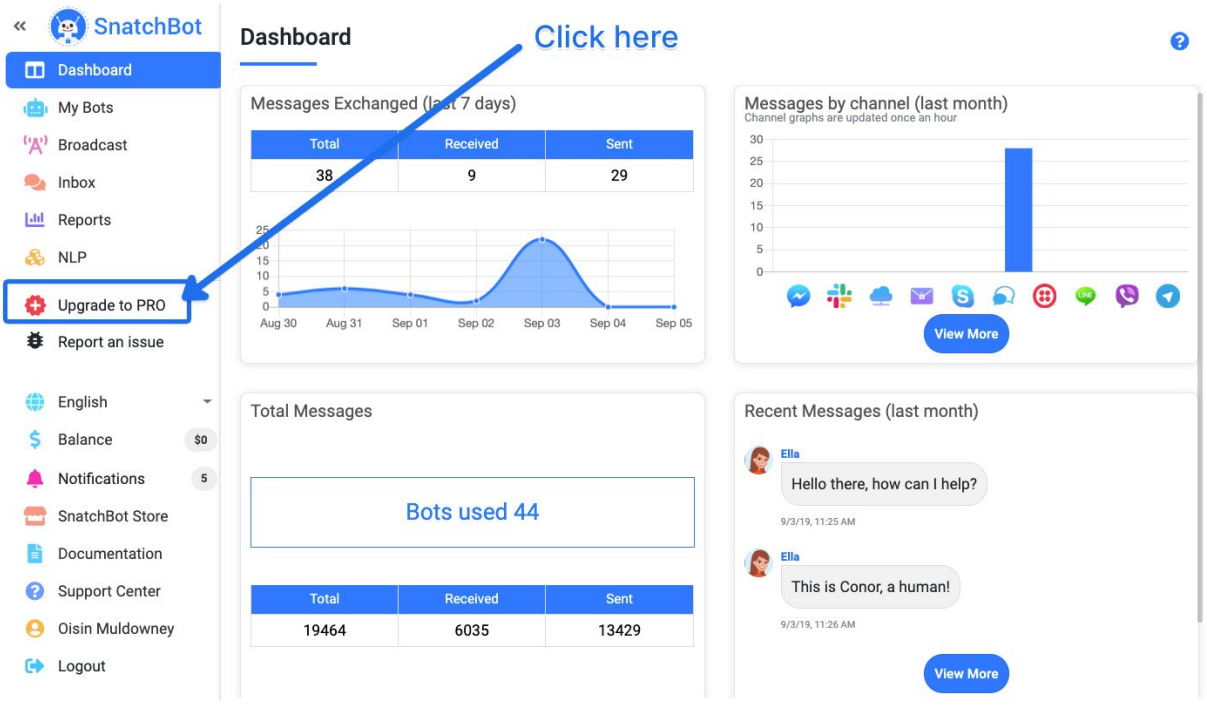
Chapter 21: The SnatchBot Pro Plan

We want to encourage users to get started on making their own chatbots, so all the core features of our platform, including the NLP engine, are available for free. Once your bot is ready for some serious work, however, you'll probably want to upgrade to a Pro Plan.
Our Pro Plan grants extra benefits, such as:

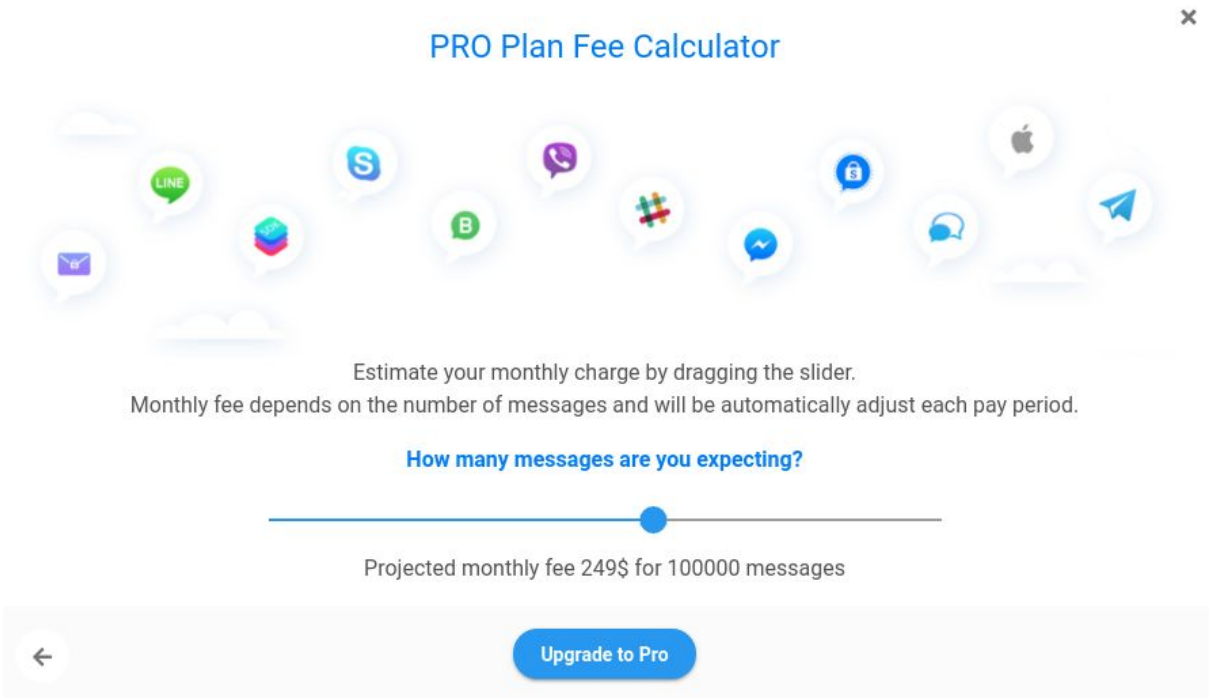
- Access to Premium Support
- SnatchBot branding removal. There will be no SnatchBot icon in the bottom of a chat widget that otherwise will show up on the user's website.
- Pro Plan users get access to an extended list of available bot plugins. These plugins will be active while the bot holds Pro status. Once a bot's Pro subscription is cancelled the advanced plugins will become inactive.
- Pro Plan users have powerful statistics about their Pro bots for a lifetime period of the bots. It allows to owners see multiple parameters of conversations with users and based on them, to adjust the bot's scenarios better.
- Pro bots have free access to the services of Translation and Address extraction interactions, within subscription tariff messages limit.
- We have many new features and channels under development and these, typically, will be for Pro Plan users only.

Costing the PRO-plan

First, click the Upgrade to Pro Plan button on your dashboard and choose the bot you would like to put on the Pro Plan.



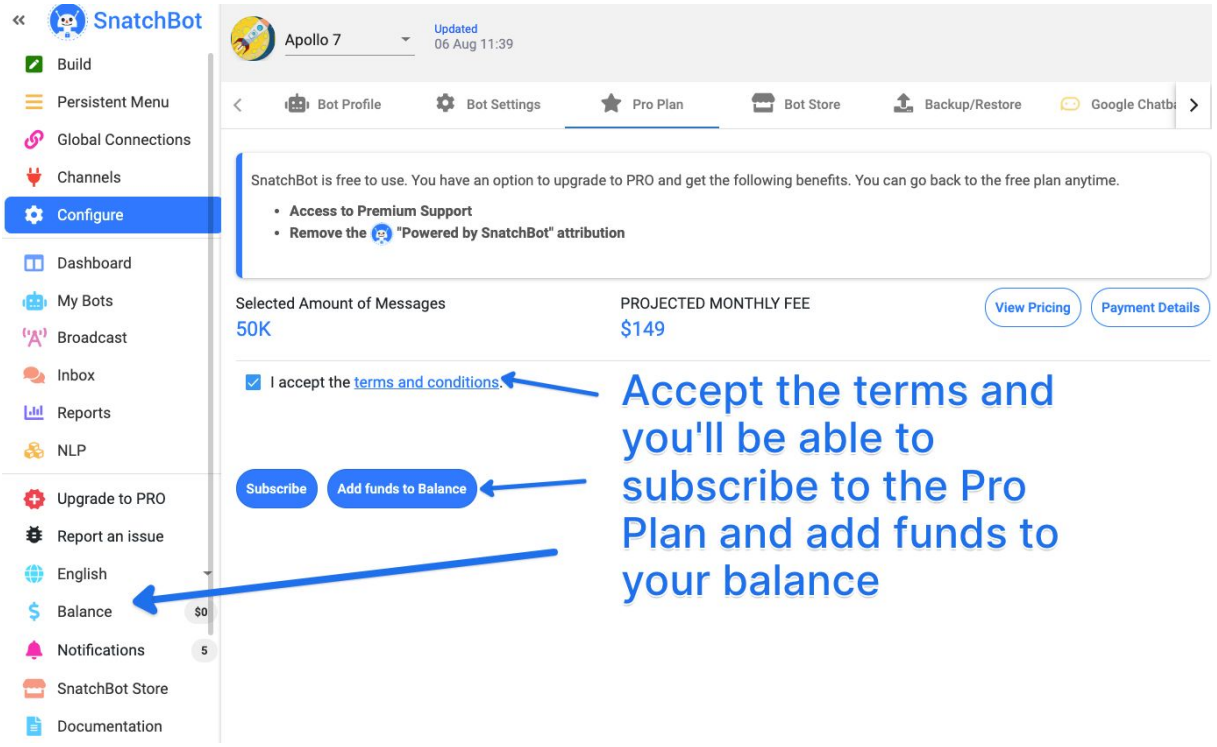
The PRO Plan Fee Calculator opens and allows you to see what your monthly usage fee will be. On the Configure page, click on the VIEW PRICING link (bottom left of the red box above) and it will open.



Then close the calculator by clicking OK and you'll see that the payment box has been populated with the projected monthly fee.

This is based on the number of messages your chatbot exchanges with its users. The plan starts at $30 a month for up to 10,000 messages, $79 for up to 25,000 and continues to $999 for 1,000,000. Having selected the plan that suits you, click the box to accept the terms and conditions.

Accept the terms and you'll then be able to add funds to your balance. After you've clicked the 'Add funds to Balance' button, you enter the amount you want to top up your account by. Click Credit Card and you can then, in fact, choose between using PayPal or a Credit Card for this top up.



Once you've paid, you'll see the new balance in the left hand column.

Click the Balance button to see further details - such as your payment history - and to manage subscriptions and top-up payments.

Now you have a positive balance, you can go back to the configure page of your chatbot and subscribe it to the Pro-Plan by clicking the 'subscribe' button.
That's it! Your bot is now able to benefit from being assigned to the Pro-Plan.

Your subscription will automatically renew on the same date the following month and every month while you have sufficient funds in your balance.

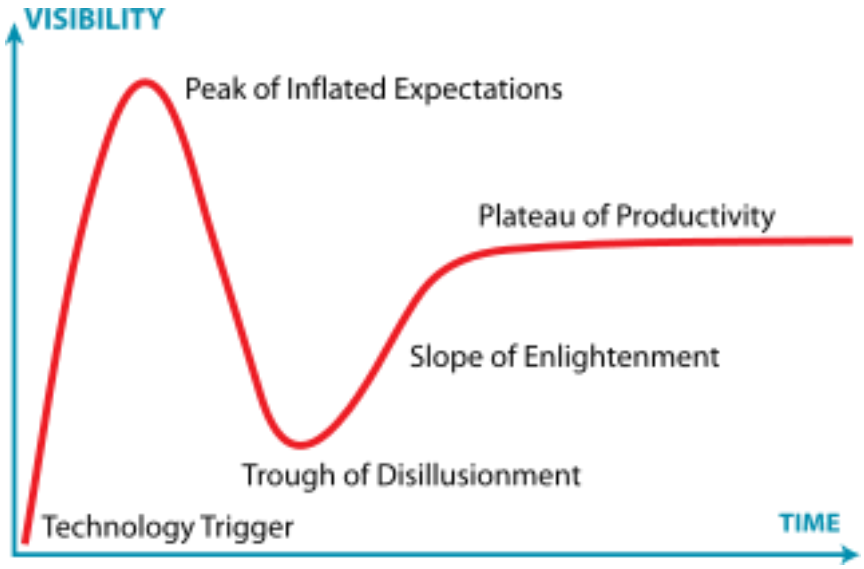
In order see how many of your monthly messages the bot has exchanged, just go back to the Configure page.

If you use up all your message allowance for the month, you have the option of increasing your tariff to the next level. This will automatically be the recurring tariff going forward. If you want to lower the tariff again manually (perhaps the high number of messages exchanged was an exception), that's simple to do. Just press the link: Change plan.

Users have the option to cancel a Pro subscription any time.

Conclusion

As we write this book, we can see the world is changing. The curve of the adoption of chatbot technology is rising. Our experience of the industry has been a classic illustration of Gartner's 'Hype Cycle'.



We founded SnatchBot in 2015 and for the first two years concentrated on developing the NLP engine and as beautiful an interface for the creation of chatbots as we could. Our goal on launch was to provide users with a tool that sacrificed nothing by way of sophistication of features but democratized the industry by allowing people with no coding background to become chatbot builders.

By the time we launched our live product, in 2017, the buzz around chatbots was incredible. Tech gurus everywhere were predicting the arrival of this technology, but around the middle of that year was probably the 'peak of inflated expectations', because the reality was that very few chatbots at that time were delivering impressive user experiences and clear ROI (many were, but some early chatbots were, frankly, pathetic)

In 2018, the buzz dissipated somewhat and you could read plenty of sceptical articles about chatbot technology. We reached the 'Trough of Disillusionment'. Now, however, in 2019 we are most of the way up the 'Slope of Enlightenment'.

Businesses understand chatbots. Individuals understand chatbots. And more and more use cases are making the technology a universal feature of our lives.

If you are reading this, you are probably thinking of building or deploying chatbots. Good. At this point, you will still be an early adopter of the technology, with all the advantages that brings.

Moreover, this is a journey that still has a long way to go. It is clear, for instance, that eventually people will interface with their phones, cars, computers, televisions, etc. through conversation.

That – along with the important issue of the broadest possible accessibility to technology – is why our roadmap includes voice to text. We are constantly introducing new features like this, new plugins, new channels. And we are constantly learning from our users about the features that they need and the challenges they want to solve through the use of chatbots.

Hopefully, this book has made the subject of chatbots clear to you and also explained how you can build your own, no matter what your background or previous interest in software.

Even for the creation of complex NLP models, there is no coding requirement with our platform. Hopefully too, you will join us on a journey that not only offers tangible benefits to those building and deploying chatbots, but is also part of a much bigger story, that of the millennia old struggle to emancipate humans from drudgery.

The best use cases for chatbots are those where the software can handle routine but high volume requests, freeing up humans to deal with more complex communications, requiring creativity and the kind of lateral thinking that humans are uniquely able to provide.

The *Jerusalem Post* was not engaged in hyperbole when it speculated that company founder and CEO Henri Ben Ezra may be in the process of adding a seventh to the list of '6 Israeli discoveries that influenced the world'.

It only needs to be added that while it took vision and courage to commit to this technology and be the first to offer our innovative combination of AI, NLP, OmniChannel functionality and coding-free interface, if SnatchBot does go on to influence the future, this will also be due to those of you who registered with us in 2019 and 2020 and helped shape the research and direction of the company.