CHATBOTS

An Introduction And Easy Guide To Making Your Own

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Introduction

I firmly believe we are on a cusp of a chatbot revolution that will be extremely important to human culture. Not quite as deep a change as the development of the internet, perhaps, the massive deployment of chatbots will certainly be more profound a change to our lives than the introduction of apps to our devices. And in the longer term, we might look back at this phase as creating the essential tools 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 and libraries. But still, the really big businesses of the world are only now getting up to speed with the importance of chatbots. This book is not aimed at them. They have large budgets and significant IT support staff with whom to develop chatbots.

Small businesses, however, along with individuals, can also benefit from using chatbots. And that is what has motivated me to produce this book. In 2017, we reached a point where anyone, with no coding skills whatsoever, could create a chatbot. I want to encourage all interested readers to do so.

This book consists of two sections. First of all, I run through the history of chatbots, 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 I would encourage you to at least dip into some of the earlier material. Naturally, I'm biased, but I think these chapters are both stimulating and fun.

I owe thanks to several people, especially Joe Crawford, Julian Howard and Chris Knight for their work on the manuscript. Also to Avi Ben Ezra and Henri Ben Ezra, the founders of SnatchBot. I met Avi and Henri at a Chatbot Summit and was impressed by their demonstration. In this book I make heavy use of the SnatchBot platform, because not only does it allow you to make your bot for free, it's very intuitive. Thanks both for your patience in responding to what must have seemed like an endless series of emails.

Part 1 Explaining Chatbots

Chapter1: What is a chatbot?

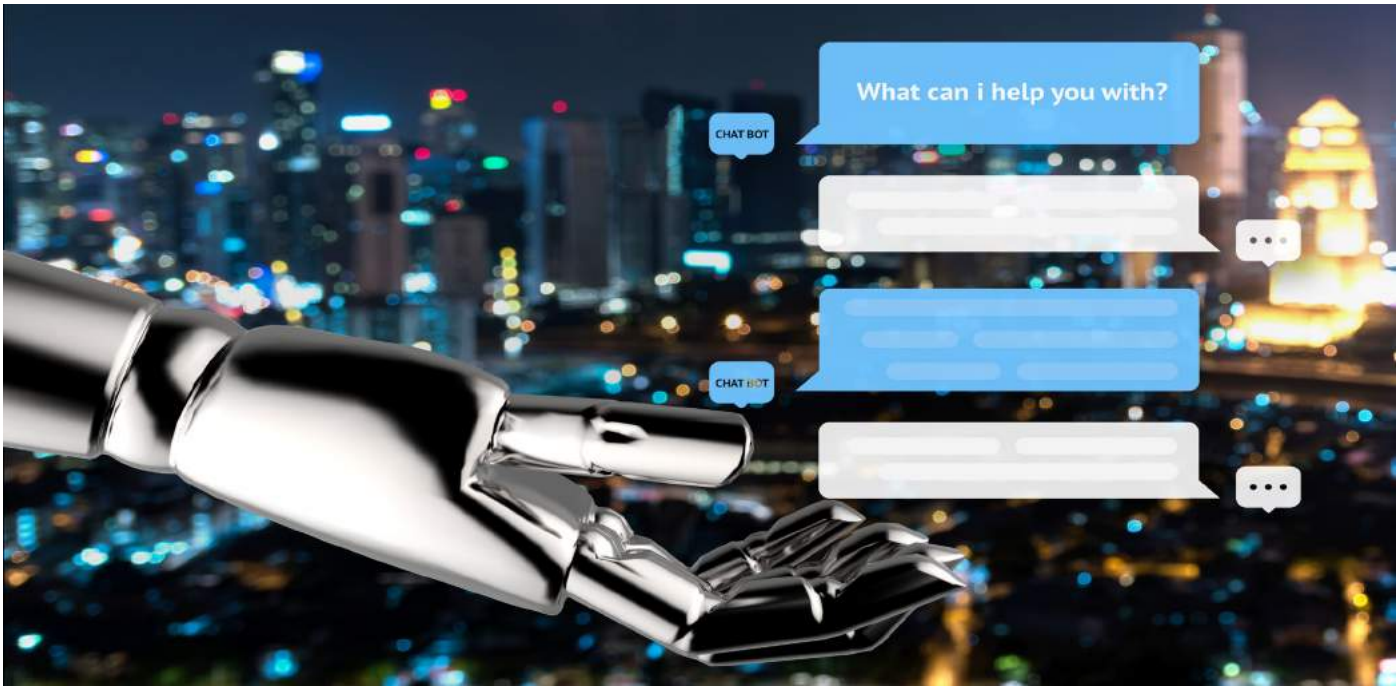
A chatbot is a computer program written to participate in a conversation. Typically, chatbots are written to interact with humans (rather than other chatbots) and they do so for an extremely wide variety of reasons. In business they are proliferating as an alternative to websites: instead of a customer having to take the initiative by searching through website pages, the chatbot provides the customer an interactive guide, which can orientate them towards the product they are seeking and even arrange payment and shipping. Similarly, 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 a search engine. The particular advantage of this for the client is if the client isn't sure what terms to search for, or where the search terms being used are too common, he or she can become frustrated with the waste of time navigating the website via their own, unaided efforts.

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 for chatbots becoming so pervasive is that people are spending more and more time messaging each other and less time browsing websites. Instead of leaving your platform (e.g. Facebook Messenger) you'll use chatbots to connect to the vast online world. And the experience will be more helpful and dialogue driven than navigating on your own.

Part 1 Explaining Chatbots

Chapter 2: A Brief History of Chatbots



Chatbots have had a long history, but now they are really coming into their own.
Photocredit: Zapp2Photo/Shutterstock

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 long, long time.

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 user inputs and sets up responses for the chatbot to give. Going beyond this style of build is among the most important next step in the Artificial Intelligence and Natural Language Processing fields.

Part 1 Explaining Chatbots

Next steps

In the mid 1990's other versions of chatbots began to appear. Though it's different from how we perceive a chatbot today, one prominent example of this includes Ask Jeeves (now Ask.com). Existing as a search engine, Ask Jeeves encouraged users to input what they want 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, platforms opening up and embracing chatbots has also been a primary driver of growth. With Facebook, Microsoft and a variety of other tech giants opening their arms to chatbots, there's never been a better time for the medium. A small sample of the industries they now occupy is provided below.

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 including 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 hiring 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.

Part 1 Explaining Chatbots

App replacement

As of mid-2017 app downloads have slowed dramatically. This has resulted a struggle 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 provide a solution to this gap.

Among the companies who were quick to use the 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.

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. Chatbot development platforms like SnatchBot and Chatfuel make it possible for anyone to create a chatbot. We are swimming in the rising waters of a tsuami of chatbot creation and should millions of crowdsourced chatbots be linked in a fashion that allows them to learn from their interactions… well, that would be the basis of a revolution more profound even than the internet.

Part 1 Explaining Chatbots

Chapter 3: The Future

Was 2017 the year of the Chatbot?

Was 2017 the the year we finally couldn't do without our chatbots? PhotoCredit: Shutterstock/Zapp2Photo

Other than the self-driving car, it's hard to think of a technology that has created more buzz than the chatbot. Chatbots, we are told, are set to revolutionize everything, but especially, e-commerce, banking, health-care and education. Just as the app took online activity by storm and has been adopted by everyone, the chatbot is going to do the same.

Yet we've been hearing this for some time.
What is the actual state of affairs? Has the chatbot revolution arrived?

One useful place to start in answering this question is with Microsoft's Bot Directory. Here dozens of interesting bots are featured and playing around with a few really does make you see the possibilities. Although none of them yet really grab me as essential, I can see the value of most of these bots, especially those that help in organizing my time and motivating me to exercise. This directory is now closed to new bots and here we get the first hint that bot development might really be moving at a fast speed: There are too many new bots for the directory to keep up. Another directory, far more comprehensive, can be found here, and again, if you want to get a taste of what's possible, it's fun to play with these. But again, too, this list is already behind the times.

Part 1 Explaining Chatbots

The big companies step up their chatbot activity

It's the big players who are likely to drive forward the use of chatbots in modern culture. And where are they on the issue? The answer is, we are now seeing definite enthusiasm for, and commitment to, chatbot development.
I think it would be fair to say that Apple's Siri is a voiceactivated chat bot. And if so, then the support given to Microsoft users, Amazon users and Google users by Cortana, Alexa and Assistant respectively, show a quantum leap forward in this kind of software.
Text-based chat bots with a more focused role to assist client engagement with a library, or health care organization, are spreading like fire on petrol. One massive stimulus to this was Facebook's decision to allow bots on Messenger. This saw around 100,000 developers create 100,000 bots for the platform in the first six months.

Millions of chatbots spring up across the world

The bot development community is blossoming exponentially. It really is like seeing green shoots emerging from a desert after rainfall. Thus last year, www.pandorabots.com reported that it had 225,000 developers, 285,000 chatbots created and three billion interactions.
I believe most of these were short-lived bots, whose purpose was primarily commercial. But there are now long-lasting chatbots delivering excellent results in the education sector, in assisting users of library catalogues (see Chapter 9), in counseling and health care (Chapter 8).

Do you need a chatbot?

I'm a software engineer who does a certain amount of freelancing, so whilst not exactly typical, I could be representative of a type of small business. Have chatbots become useful to me? To explore this further, I went to SnatchBot.me and created my own free chatbot.
I found it very easy to create a basic chatbot and – this is crucial – attach it to my Facebook business page. Now, every time a potential client sends me a message, they engage with the bot. Of course, I don't want to alienate anyone, so the first thing the bot does is give out my email if the reader wants to contact me in person. But it then guides the conversation to steer the reader to the services I provide that might most suit them.
At first, I made several blunders in the logic of the conversation. They were all very easy to fix, however, and also as I saw the kinds of interactions that readers came up with, I added on new layers to the conversation.

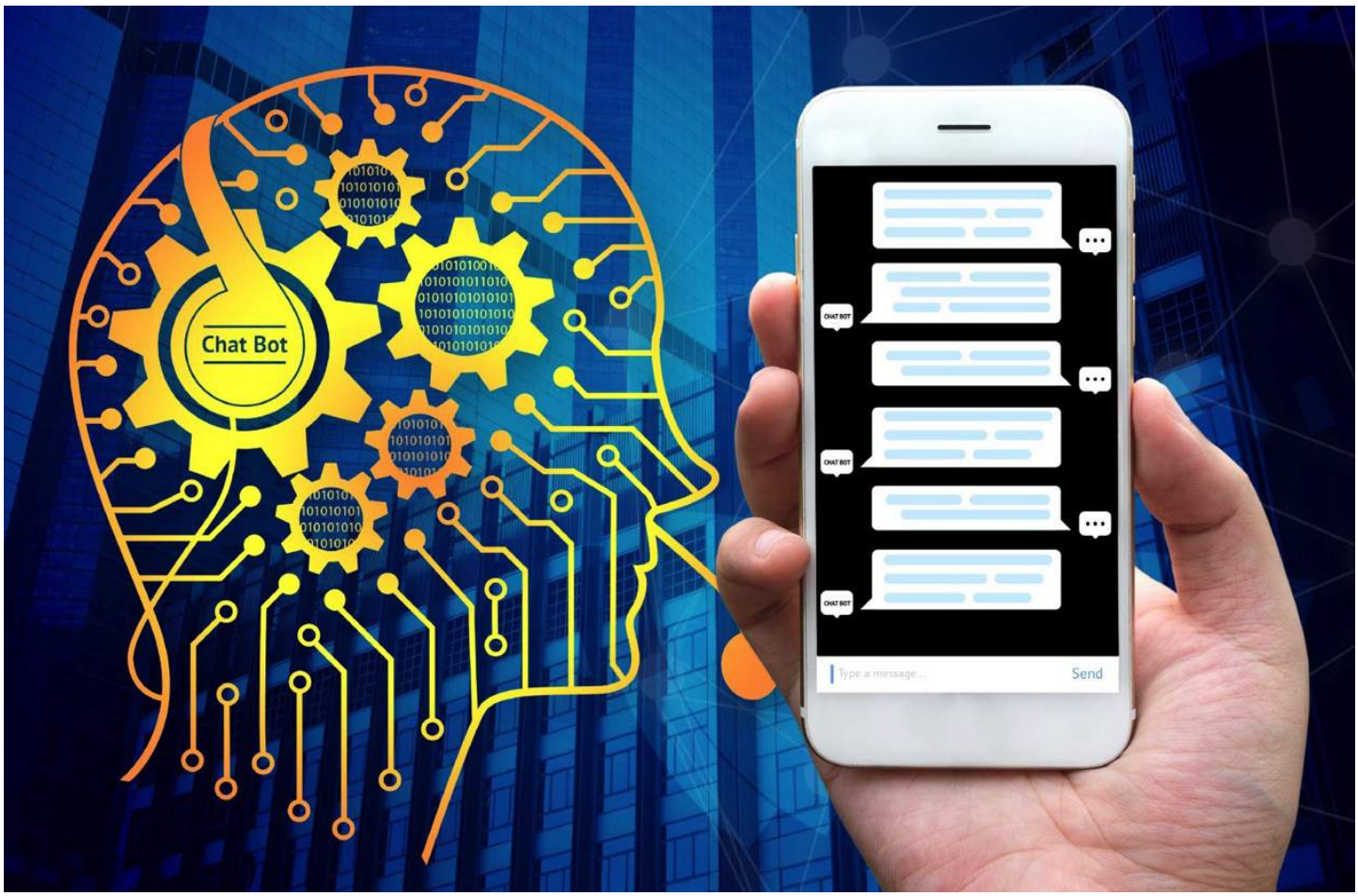
Part 1 Explaining Chatbots

Practically, my bot doesn't represent an enormous gain compared to using Messenger in its usual way. But I'm very happy with my bot and will certainly keep it. The biggest plus is that I get a chance to project a certain amount of humour and enthusiasm through the bot.

And I think for businesses, this is an under-appreciated aspect of chatbots. Chatbots are not just tools to connect users to the information they want (and they are much better tools for this than FAQ pages on websites), they are an opportunity to promote your brand. If you are a bank, your chatbot will be sombre, accurate, polite. If you are a health care organisation, your bot will be sympathetic. If you are an entertainment organisation, your bot will be lively, funny, cheeky even.

So yes, 2017 will be seen as the year of the Chatbot. Not just because the large companies started using them, but because that was the year it became truly simple to create your own.

The Future of Chatbots: An Interview With Avi Ben Ezra of SnatchBot.me



Can the crowdsourcing of chatbots lead to AI? Picture: Zapp2Photo/Shutterstock.com

Part 1 Explaining Chatbots

Back in the 1980s, I took a philosophy exam and answered a question about whether artificial intelligence was possible or not. Blade Runner had just come out and as I loved it, I answered 'yes' by writing an imaginary conversation between a human volunteer and a program speaking over the phone. I didn't know the word then, but I was writing about a 'chatbot'.
In 2017, I had the opportunity to talk to Avi Ben Ezra, the Chief Technology Officer of SnatchBot. Founded in January of 2015 with the goal of making bot-building easy and accessible, SnatchBot is a fast-growing Israeli company. Avi is the architect of the platform and the user interfaces.
I brushed up on my interest in the subject of chatbots and asked Avi about his vision of the future.

What can you tell us about the future role of bots?

There is going to be an exponential growth in the role of chatbots over the next decade. Already, given the current state of the market and the speed at which it is expected to grow, we can see how rapidly the use of bots is advancing: a recent chatbot report released by BI Insider revealed over 80% of businesses are expected to have implemented some sort of chatbot solution by 2020. As the market pushes the technology forward, interactions with chatbots will become more and more sophisticated.

Is this a path to true artificial intelligence?

I think so, but let's split this question into two parts: what we can be sure of and what we can speculate about.
We can be sure that more messaging APIs are opening and as they do there will be growth in the number of channels supporting chatbots. For instance, WhatsApp is joining the fun. WhatsApp is the number one messaging platform in the world, yet so far, no one is allowed to build chatbots for it. We know Facebook (their parent company) is working on this. Expect news very soon.
Big brands are investing in chatbots, streamlining some of their processes or simply turning their brand into an approachable conversational experience. Consumers are more willing to engage with chatbots, providing the chatbots are entertaining and providing relevant information. Put this all together, and we see a rapid evolution in chatbot-human interactions. Already, it's possible to build chatbots that respond to emotional content (whether the person sounds cheerful or happy, agreeable or discontented) and tailor the chatbot response accordingly.

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This combination of powerful market forces and increasing ease of chatbot building makes me certain that they will soon achieve a certain level of what you might call 'artificial intelligence'.

Now, to the speculative part. There is a huge discussion about what makes for consciousness, and my belief is that it will be possible to create fully sentient software. Some physicists believe our universe is a model and so we are sentient software. Having said that, there is a major tipping point to reach before we can talk about true AI. The chatbot has to be able to learn and it has to be immensely more complex. It's well known that the brain has more potential pathways than there are atoms in the universe. Currently, chatbot pathways are extremely crude in comparison.

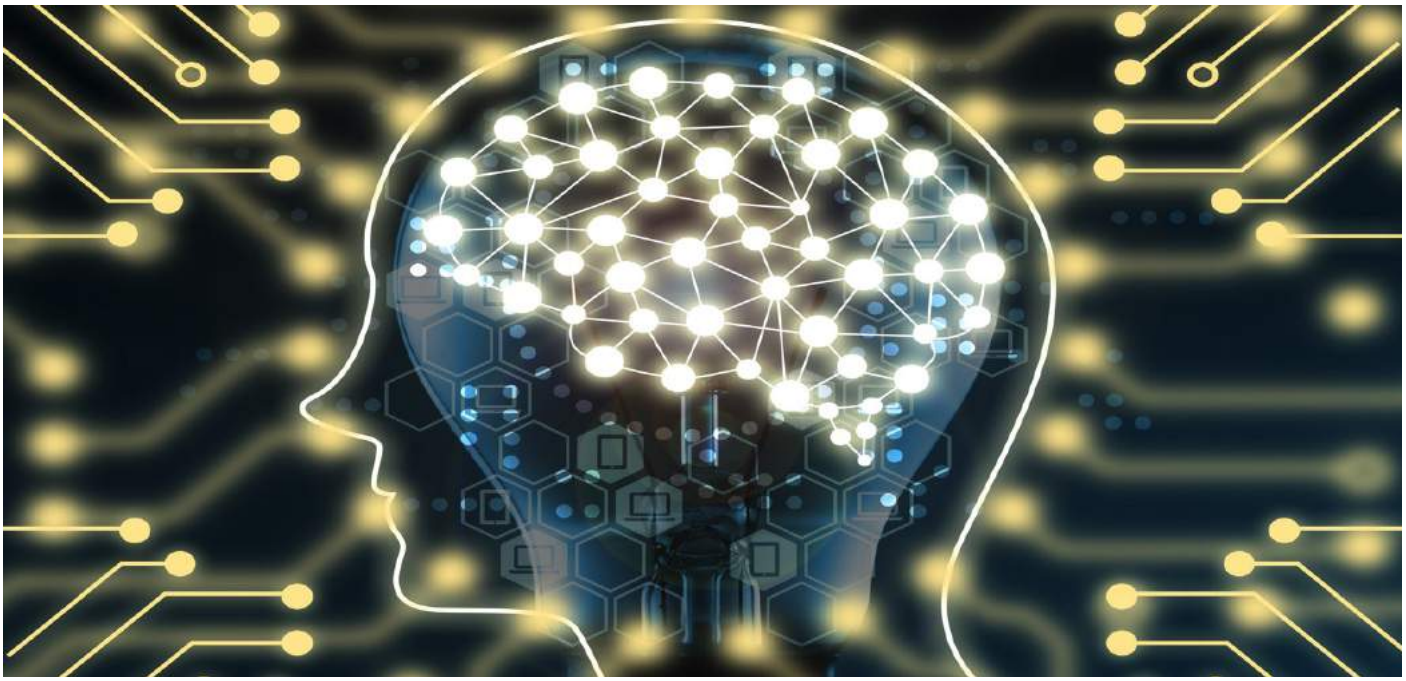
But AI could arise out of chatbots?

It could. I think so. There are other paths to AI, of course, but those based on pure research don't have the same momentum as chatbots currently do. What we are trying to do with SnatchBot, for example, is a kind of crowdsourcing of the creation of chatbots. If thousands, millions even, of chatbots are being created and linked up you really are harnessing the kind of intellectual energy that leads to technological revolutions.

And that, to me, is a really important point. Human language and consciousness evolved together over millennia. We can accelerate that process dramatically for AI and language, especially if we can contribute to the process in our millions. Everyone should have a bot and perhaps it's not too long before everyone will.

Part 1 Explaining Chatbots

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



Rapid strides are being made in Machine Learning and AI, which are crucial for successful chatbots. Photocredit: Zapp2Photo/Shutterstock

Machine Learning is the label given to algorithms that allow a machine to take feedback from data and adjusts it processes. 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'.

Machine Learning is a technique that allows machines to improve their interactions with human language. The process by which meanings expressed in human language are broken down to give information to machines is defined as Natural Language Processing (NLP) and Machine Learning is an essential feature of NLP, as the machine 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 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 the one arrived at via trial and error.

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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 giving it 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 a machine that responds to human language and tries to do so intelligently. Clearly, chatbots need Natural Language Processing. But it is less clear whether they should be constructed with AI or Machine Learning or both. To some extent the answer depends on the scope of the task for which a chatbot has been designed. Many chatbots will have a relatively narrow purpose, let's say to answer questions from prospective students about course content. For this task, a machine learning approach would seem appropriate.

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 adjustments to the chatbot's structure in the light of instances where the conversation did not lead to the appropriate information being supplied to the student. A college wouldn't have to do anything more sophisticated than this, but it is worth noting that the process of analyzing 'failed' conversations could in turn be automated, as could the process of adjusting the chatbot, creating a more genuine case of Machine Learning.

Part 1 Explaining Chatbots

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, the AI approach would make more sense. Not only will the chatbot need a large vocabulary and knowledge base, 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 have been 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 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.

Learning for an AI orientated bot takes place in a fashion that is already evident in Facebook's new M service. This chatbot refers tasks that it cannot do, such as make a reservation at a restaurantt, to a human operator. And as the human carries out the task that the bot was not yet able to do, it learns from the example. The goal is that in the long run, very little human input is needed as the chatbot has a comprehensive range of abilities and answers.

It should be evident from these concepts that the kind of runaway super-AI that has been speculated about and which is a concern for some, is a very long way off. What this means for chatbots is a much more modest but nevertheless important claim. It is now possible to create chatbots that 'learn' in the sense that they can rapidly become more sophisticated and successful in their desired roles, even when created and run by people with no coding background.

Part 1 Explaining Chatbots

Chapter 5: Customer Service

Chatbots are the New Kings of Customer Service

Customer support is increasingly carried out by chatbots. Photocredit: rawpixel.com/Shutterstock

Across all customer service businesses and departments, the chatbot represents the biggest sea-change to the industry since the onset of the outsourcing trend. Chatbots using natural language processing, contextual knowledge graph-accessing, accessible in AI driven booths or kiosks can act as the front-line service agent for websites, mobile apps, in stores, and across corporate offices, and this is only the beginning.
IBM quotes estimates that Chatbots and their successors will save businesses $8 billion each year by 2020. Many reports suggest cost savings of around 30%, while the time saved for key customer support personnel could be equally dramatic, allowing them to focus on only essential queries.

Time is the most valuable commodity

The key success metric for Chatbots is not necessarily revenue, or cost. They are quick, easy and low-cost to install, operate and maintain thanks to Cloud services. The success metric is time saved. A chatbot can eliminate large numbers of phone calls being made, emails needing to be read and other correspondence being generated. Their 24/7 nature also allows companies to

expand their presence around the clock and maintain some type of support coverage.
Many businesses already know this, and others are catching up fast thanks to the proliferation of chatbot creation websites. Everywhere a company has visibility, a bot can be placed. It is hugely significant that instead of a potential customer having to leave their favourite messaging platform to search out a company, the chatbot can interact with the customer where they spend their time. Chatbots are saving customers time and effort as well as valuable time for key human resources, allowing human staff to deal with difficult customers, complex requests or cases that need empathy and so on.
In some areas of customer service, chatbots are already seeing rapid familiarity among consumers. The likes of Domino's and Pizza Hut can take orders using Facebook Messenger, with Amazon Alexa and Twitter as alternate contact points.

Chatbots are becoming smarter, but how smart is smart enough?

The trick for the next generation of chatbots is to expand the ecosystem and intelligence to put the chatbot anywhere, anytime and ability to improve how it responds to user needs. While chatbots might be tightly focused now, more conversational chatbots will be needed soon for the travel or tourism industry, chatbots that can deal with complex requests like, 'I need a flight to Miami today, and need to be in China for Monday. Plan my flights.' Intranet bots working within a business will need to understand 'I need a team call at 4PM EST and message Sarah that I need her figures.' In order to understand the meaning of 'team' and who is 'Sarah', the AI will use directories and user history, but it had better get it right.
By saving busy people time, and likely money, chatbots will rapidly grow to become the go-to source for information and interaction. When that becomes common at the executive level, every business will see the effect trickle down, helping to replace slower lines of communication or replacing outsourced services with a dedicated AI bot that will know the company better than any human.

Chatbots vs Virtual Personal Assistants (VPAs)

For now, these two digital creations remain fairly far apart. VPAs live on smart home or consumer devices. Chatbots largely inhabit browser pages, Facebook Messenger, or apps. Even those created by the same companies like Google, Microsoft and others

reside in the cloud and are kept distinct (Amazon Lex vs. Amazon Echo and Alexa, Google API.AI vs Google Home and so on).

This distinction will soon close, however, as business users and consumers see their needs merge. Siri or Alexa might link to a different cloud service to provide companies with access to chatbot resources, but we are rapidly heading to a world of voice-chat to increase interaction.

That will allow those AIs to stretch their chops when it comes to measuring stress or annoyance, which is likely to be one way to get to talk to a human operator, fast. Translation could be another benefit and greater access to other data resources will see chatbot's knowledge potentially grow. The question for business is what's better, a series of chatbots that have narrow fields of expertise, or one uberbot capable of handling any request? I suspect that most will stick to the specialized type to allow for fine control and evolution, but still expect them to be more accessible as the push to be helpful anywhere and everywhere grows.

Any business looking at chatbots should start out small and simple, handling the most common or regular of requests, before building out chatbot expertise and knowledge to better help the company.

Part 1 Explaining Chatbots

Chapter 6: E–Commerce

Chatbots Put the Smile into E-Commerce

Business has to move to find customers where they spend time: on their messaging platforms. Photocredit: ESB Professional/Shuterstock.

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.

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, while SnatchBot aims to deliver free chatbots across multiple platforms on a massive scale.

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

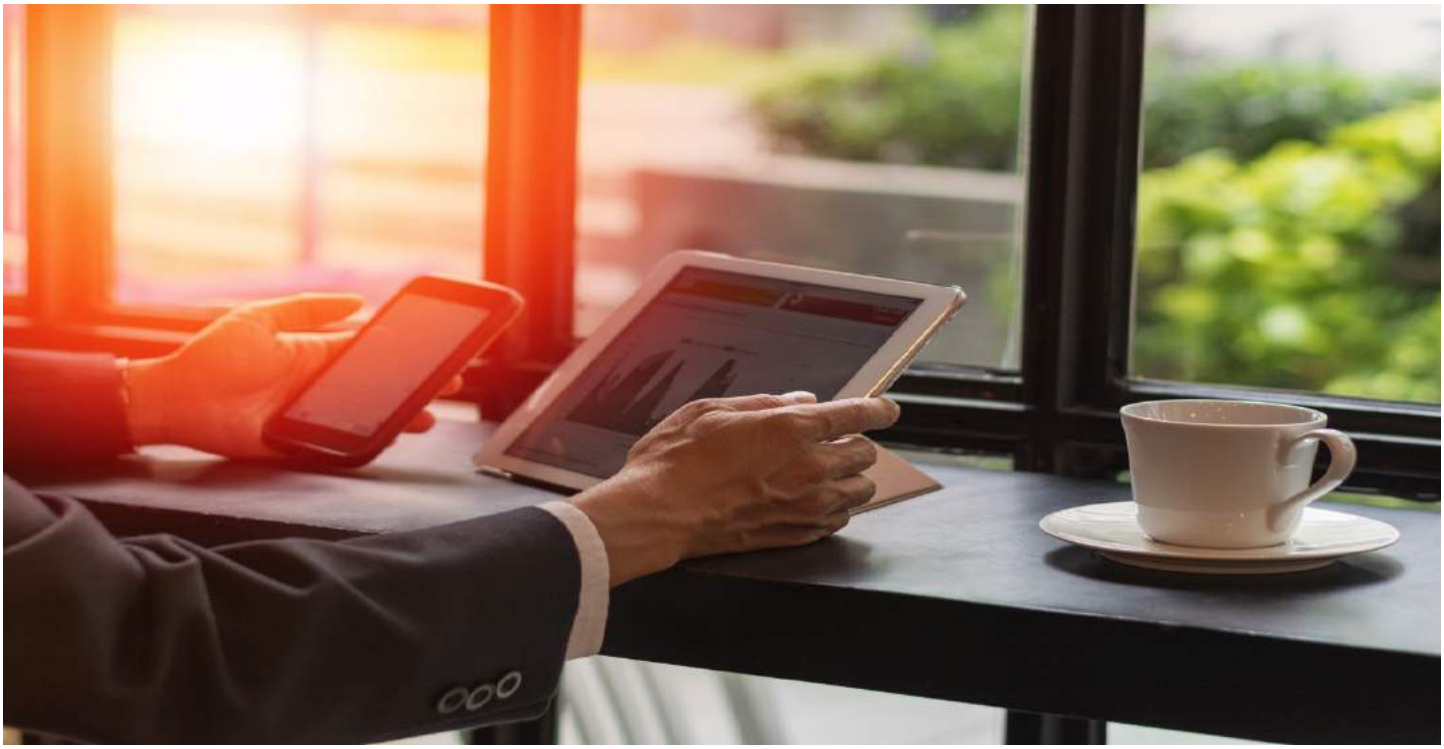
But, the key focal point is the customer. They need to be aware of what chatbots offer, that they are talking to a machine and to understand and appreciate the benefits and to feel that it helps or rewards them in some way. In e-commerce, chatbots can help customers find the product they are after, can 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 vs Chatbots? Which are the better e-commerce tools? Photocredit: Blurryme/Shutterstock

Part 1 Explaining Chatbots

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 will be examined:

- 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. They 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.

Part 1 Explaining Chatbots

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 they're available and sends appointment times based on that 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.

But, 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.

Part 1 Explaining Chatbots

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 plan on increasing email spend, while only 7.5% indicate that they will decrease 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.

However, 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 it's 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 it's 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 it's own advantages and disadvantages and can even be upgraded by having the two work in conjunction. After all, marketing is at it's 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.

Part 1 Explaining Chatbots

Chapter 7: Chatbots vs. Apps

In the future, will people access your business via app or chatbot? Photocredit: Zapp2Photo/Shutterstock

Does your business need an app or a chatbot?

The choices for businesses continue to widen when it comes to their digital footprint. Everyone should have a website, but should they have an app, a dedicated mobile site or a chatbot?

The cold, hard truth about apps

For most businesses, the terrible reality of apps is that no one will care about yours. Unless your name is Facebook or Amazon, your app has phenomenally small odds of seeing much adoption, even among core customers.

If your app mirrors website content, what's the point of having a separate product? If it has some cool features or tools built in, how are you going to tell the world about them? Especially when competing with dozens of other apps that do the same thing? With thousands of new apps releasing each month, the chances of yours being a success are vanishingly small, and the chance of a return on investment is similarly miniscule.

Bots can act as customer support, support ticket management, translation or currency tools. Features can be added or updated live, and always accessible in the cloud. Updating an app is often costly and requires long periods of time, depending on your developer.

Part 1 Explaining Chatbots

Piggyback your way to success

For most businesses, the key reason for an app is to provide information or to create support or communications tools. However, it would seem logical that if the likes of Facebook and Skype, and their billion-plus users have already done the hard work of gathering users together for you, why not build a chatbot that leverages that success?

Your chatbot will be visible to search, is accessible through websites and social media links. Also, it takes less time to build a communicative bot (virtually anyone can do it) than an app. Leveraging services like SnatchBot's templates can create a chatbot for multiple services without the need to duplicate effort.

Using a simple and intuitive chat-builder tool, you can greet and guide visitors to a range of solutions or information through logical steps. Picking up on key conversational requests, the bot can guide a conversation easily. Not only can chatbots be useful, but fun and time-saving, with only serious requests for help being put through to customer service points of contact.

With the chatbot easy to run on multiple platforms, it will take some time to build one that can address all the queries your business usually comes across, but the brilliance of a chatbot is that it can be updated to address new types of requests at any time.

Chatbots vs apps

Having established that it is easier and less costly to create and launch a chatbot than to do so for an app, there are other reasons to consider a chatbot first. IT research types believe that by the start of the next decade, some 85% of computer or smartphone based interaction will start with a chatbot or AI type interface.

That's a pretty fast move to adopt technology and every type of business from retailers to customer-service focused businesses can all see the money and time saving efforts in having the 75% of minor queries dealt with by a bot.

Important issues can be easily escalated by the bot, and more importantly it can direct queries to the right people, rather than leaving people addressing generic customer service email point of contact, or left in, 'press x to talk to accounts/retentions/returns/' loops.

While many brands and retailers will continue to rely on their app, for smaller businesses, the need for the app diminishes as chatbots can deal with most requests. And, as social media adoption grows, your business may as well have its chatbot on a Facebook page, website or messaging rather than buried in a costly dedicated app.

Summary

If you already have an app, consider what it does for the company, and the business benefits, among the cold hard data like downloads and interactions. Consider a bot as a friendlier, more accessible option. That is certainly the case for businesses large and small, and the rise of bots is something that is taking over many facets of customer interaction. The app, much loathed by Steve Jobs, may have created many success stories. But increasingly, it is the chatbot and the rise of AI that represent the future of interaction with customers. And people are lapping up bots, which are always available, instantly accessible and can be created with more personality than a hold tone.

Part 1 Explaining Chatbots

Chapter 8: Banking

Banks using chatbots are two steps ahead of the field

A close look at how chatbots are shaping the future of banking. Photocredit: TIppaPatt/Shutterstock

Look closely and you'll see that banks have long been leaders in adapting new technologies. From SMS balance requests to IVR telephone banking to apps, a highly competitive environment forces banks to deliver value to their clients in new ways. Banks typically provide products that are nearly identical to those of their competitors, leaving innovations in customer service as a main driver in retention and acquisition. The latest of these innovations lies in chatbots and conversational interfaces.

Until recently, bank clients had to rely on physical branches to answer complex questions. Stand-alone banking apps either lacked the functionality to do so or failed to present it in an understandable manner. Chatbots allow us to ask the difficult questions that traditionally required a trip to the bank, from our own devices and our own homes.

A medley of functions

Capabilities vary from each bot, with some offering highly complex investing and lending features and others focusing on common transactions like checking account balances, paying bills and transferring funds.

Part 1 Explaining Chatbots

Potential features include:

Retail banking:

User/account registration, dual factor authentication, branch locator, spending analysis, contact requests, cheque orders and lost/stolen card cancellation.

Payments and transfers:

Client onboarding, internal/external money transfers, bill payment, payee addition/removal/modification, P2P and recurring payment setup, exchange rate data and alerts and real-time financial market data.

Wealth and asset management:

Intelligent risk assessment questions, portfolio re-balancing suggestions and performance analysis and mutual fund and equity transactions.

Lending and financing:

Mortgages, monthly payments and more.

Blockchain transactions:

Bitcoin and Ethereum.

Where to find them

Bank bots can be applied in many different digital interfaces. Where they live should be determined by the level desired of functionality and the needs of the customers it targets. There exists three common placements:

Within Banking Apps

Bank of America is preparing their bot, Erica, for launch in 2017. Going beyond simple transactions, Erica aims to improve the customer experience by analyzing your account and transactions to deliver tailored banking advice. Erica will function as a feature within the stand-alone Bank of America app. While this has the advantage of easy access to existing app users, it's a shift away from the trend of allowing bots to function in existing messaging platforms.

Existing Messaging Platforms

Apps are like languages. Each one has a unique layout and pattern of operation, requiring the user to spend time exploring and memorizing how to com-

communicate what they want to do. When a bank creates their own app, the client must essentially learn that language. But what if you could reach them in a language in which they are already fluent?

A bot that lives in established messaging platforms such as Facebook Messenger, Slack, or WeChat allows just that. Barclays Africa is one of the first to move in this area. By simply linking their Facebook or Twitter profile to their bank account, clients can use these popular apps to fulfill their banking needs. In doing so, banks bring their services to where you live — both physically and digitally.

Digital Banks

The omnipresence of the internet has enabled the creation of online-only banks. These banks that exist solely in the digital realm tend to cater to clients who are looking for basic functionality at a low price. Some are taking this even further, creating bots that allow you to connect to your existing bank. K2 Bank, for example, is an independent bot that provides advanced banking features through it's own conversational platform. This means that you don't have to wait for your bank to catch up and create their own chatbot.

Customer Impacts

Complete complex actions faster

Chatbots shatter the visual language barrier that comes with downloading and learning a new app. Banking chatbots within established messaging platforms let clients bank on their own terms, and in their preferred language.

Versatility of multiple channels

The more ways banks can reach their clients, the better the client's' experience. Providing access on a variety of platforms shows that a bank is willing to cater to their individual needs — a critical aspect of building customer loyalty. While this is convenient, it can lead to your information being spread thin across your digital life. Bot builders SnatchBot are the first to solve this by providing truly seamless functionality across platforms. So you can start your financial conversation in Messenger, switch over to Twitter, and finish on SMS without leaving behind any of the important details.

Do more, wherever you are

No more need to book appointments and travel to a physical bank location. The conversations about loans and investments that apps were unable to

handle can be smoothly carried out by bots. In addition to saving time, clients also benefit from conducting these transactions in a lower stress environment than a face-to-face meeting with a bank employee.

Improved financial habits

A client interacting with a banking bot creates data regarding their financial behavior. Analyzed properly, this provides banks with the opportunity to give financial advice to the user through the chatbot itself. While traditional bank apps are capable of this, bots have the advantage of existing in platforms like Facebook Messenger : a place where they are much more likely to be viewed.

Bank Impacts

Less in-branch activity

Operating a physical branch creates infrastructure and human capital costs. As customers complete more and more transactions through technology such as bots, the costs operating and staffing physical branches declines.

New context and data

In branches, employees can gather data on customer physical behavior. In apps, transaction data is recorded and ready for analysis nearly instantly. Bots are unique in that they can capture not just binary financial data, but also the context of customer requests, and how they make those requests. As the ability to capture and act on data becomes an increasingly imperative part of business operations, bots' unique ability to capture all inputs for analysis is a clear benefit to banks.

Enhanced client experience

A single positive or negative experience can mean the difference between a customer giving a bank their six figures of business or taking it to the competitor across the street. Therefore it is of the utmost importance that banks seek out ways to please clients at all turns. A bot can establish a stronger, more positive relationship, helping banks not just keep clients, but keep them happy as well.

What's next?

If you're a customer, do a little research to find out what kind of bot your bank provides. Or, if they don't yet, services like K2 Bank may be what you're looking for. As for financial institutions, now is the time to take the next step to cementing a positive client experience.

Part 1 Explaining Chatbots

Chapter 9: HealthCare

Chatbots will revolutionise a client's experience of health care organisations

Image: Chatbots will connect doctors and nurses of the future with their clients and their digital needs. Photocredit: Gushkenova/Shutterstock

If you've ever had to visit a health care organisation's website to find information, you've probably had a frustrating experience. Even the best are hard to navigate to find the precise information you want. But that's about to change thanks to the chatbot revolution, as I found when talking to Henri Ben Ezra, CEO of SnatchBot.me

What would be the first benefit of chatbots for the healthcare industry?

Chatbots are interactive. At the moment most healthcare organisations have a passive relationship to their clients when it comes to communication. The client searches the website unaided. There has been some attempt to provide information via alternate platforms, but this often worsens the problem rather than improving it because of a lack of inter-operability between applications.

Most organisations, including hospitals and medical practices, have done little to advance their client communications systems. Often their best effort is a question and answer page on a website. This is very limiting and patients are frustrated. Now for the revolution. With a chatbot the conversation goes back and forth, allowing the client to navigate towards information they want with great precision. Users and caregivers are made to feel empowered. Using a chatbot they receive a better and simpler to operate – through speech - information provider which works in real time, answering the questions on the spot.

Part 1 Explaining Chatbots

This is efficient, responsive and inclusive.

Not only do consumers want quick, easy access to information, they also want the interaction to be engaging and personal. This is where chatbots have a real advantage. The user is made to feel that they are included in the process of their health. Patients who feel included, who are interacting through chatbots with the healthcare system, will stay with the system, and that is important for them and the healthcare provider.

How do patients feel about interacting with Chatbots?

Chatbots give clients a friendlier experience. It has been well attested that people prefer the sense of conversation and interaction that comes with a chatbot over navigating with a mouse and click. And, they prefer chatbots to scripted interactions. Whether it is something deep rooted in our humanity that we anthropomorphise, the fact is that people feel happier with a communication experience via a bot than otherwise.

Customers have had to navigate traditional one-sided transaction menus and screens and automated computer language instead of human language. This is frustrating and time consuming. What they get with chatbots is human language interaction, or, what is known as conversational healthcare. This is a much more enjoyable for patients as the interaction is humanised, giving them a personalized, proactive experience.

Through Chatbots, answers are obtained quickly and efficiently. Who has the time to be put on hold on the phone or hustled from one department to another? None of us. We want the information as quickly as possible. A chatbot saves time, freeing patients up for other activities.

Are chatbots secure?

They certainly can be. In our case, with the SnatchBot platform, we pre-build all the security and administration requirements and scalability that the largest enterprises in the world expect. So chatbots built on SnatchBot.me come with the highest standards of security. The platform also provides a framework so developers can build bots that perform with remarkable consistency across all chosen channels.
As a matter of fact, SnatchBot exceeds enterprise-grade standards, providing not only enhanced security but also enabling administrators to retain exclusive oversight of bot distribution and use, including management of software licenses, user behaviour insights, and deep analytics. SnatchBot supports all cryptographic security needs to protect an enterprise's data.

Do you see other benefits to Healthcare stemming from chatbots?

Chatbots can have functionality in so many areas it's mind boggling. For instance, appointments can be scheduled. Patients can provide information which their caregiver may use to reduce unnecessary readmissions and organise post discharge follow-ups. There is a strong safety net in the functionality too. Alerts can be a function of chatbots. A chatbot can signal hospital staff if patients need assistance and even inform care teams of urgent changes in a patient's status or an emergency situation.

Chatbots can also take much of the tedium out of front office healthcare; they can streamline admissions, discharge and transfer requests, schedule patient consultation requests and send/receive referrals. They can be programmed to facilitate collaboration between peers and update record systems with patients' medical history, and to send alerts and notifications for prescription refills. No longer will a patient turn up at a consultation only to find their notes have not been provided. Chatbots will automatically send relevant training material, patient history and pertinent data to the necessary parties ensuring the smooth running of the health system. And while it is nearly impossible to integrate all information sources, chatbots can create a single system of records by transferring data from legacy systems to new databases, saving healthcare systems time and money.

In short, chatbots can save thousands of working hours a year for a healthcare organisation, leading to cost savings and/or a better quality of service for the user.

How do chatbots deal with the sheer number of different ways people search for information?

Chatbots allow the patient to interact with the healthcare organisation via their platform of choice. Every day vast amounts of information are being gathered and stored in the healthcare sector. It is kept in a confusing array of different systems, applications and data silos. Chatbots will allow safe access of this information to the relevant patient, regardless of platform, and allow the exchange of data from disparate health systems. This will unify the data stream and manage interactions in a way not previously possible.

In the fast-paced modern world with multiple information platforms, chatbots unite the digital playing field to provide seamless integration regardless of location, device or time. The chatbot is able to access information and respond to patient queries over a range of channels. Wherever the user is, chatbots provide answers in an easy to understand and conversational manner.

Part 1 Explaining Chatbots

I'm guessing another benefit of chatbots, is to healthcare organisations themselves?

Yes. Not only do chatbots enhance the experience of patients in their interaction with their health service providers, chatbots can also facilitate the data needs of healthcare professionals and provide other benefits to the organisation as a whole. We have already written about the functionality and labour-saving aspects of chatbots. There is also the issue of information and analysis. Chatbots can manage the millions of data stored by healthcare organisations and use the metrics from the interactions for analysis. This data can be used to predict trends and meet the demands of their customers. On the back of this, chatbots can produce realtime analytics and reports which reduce the need for audits.

Another benefit is that through chatbot programming, data use is performed in full compliance with all healthcare standards and regulations so the organisation knows it is on safe ground. Additionally, a health care organisation using chatbots reduces or even eliminates human error in HIPAA challenges.

So, in summary, where is all this going?

As discussed, chatbots are an interactive system providing a high-quality patient experience, work on multiple platforms and give massive data collection tools to the healthcare organisation which uses them. Chatbots, through consumer information servicing, are about to bring a revolution to healthcare systems.

Part 1 Explaining Chatbots

Chapter 10: Libraries and Archives

Chatbots and Archives: the Next IT Revolution?

Users will navigate catalogues with the help of chatbots. Photocredit: ESB Professional/Shutterstock.

At a 2017 talk to the National Library of Ireland, Richard Ovenden, Bodleian Librarian, Oxford, gave an example of how a Bodleian archivist, while discussing with a scholar about her work, orientated her to The Selden Map of China. The resulting studies of the map redefined the discipline, highlighting the presence of shipping routes that indicated strong links between China and the rest of the world in a period when the country was thought to have been isolated.

This kind of expertise, where an archivist can have an indepth conversation with a scholar and connect the archive collection to a research project is invaluable. But at the same time, not everyone can make the trip to the archive they want to use, nor does the archivist have time to provide every archive user with lengthy, one-to-one advice.

To some extent, digitization and the provision of well thought out meta-data, allows researchers to discover the material they need in the archive collection. Which is why Richard Ovenden also made the point – light-heartedly – that archivists need to also be IT experts. Yet, if anything, the thousands of newly digitized items that come online every day create as much of a challenge as they solve. More than ever, users need guidance through oceans of data to come to the material that need.

Part 1 Explaining Chatbots

The chatbot revolution that is taking place elsewhere e.g. in customer service industries, healthcare and banking, will have the solution to this bottleneck. In another round of queries, I asked Henri Ben Ezra, CEO of SnatchBot, specifically to address how chatbots can meet the challenge of providing expert guidance to researchers who might not know what relevant material exists within an archive.

Can you first explain why you believe a chatbot is more useful for users of archives than a website search?

The significant advantage for researchers of dealing with a chatbot rather than using a search engine on a webpage is the question of interactivity. Using a search engine is a one-way procedure. You set the search term and see what comes up. If you aren't exactly sure of what you are looking for, or if the term you are searching for is a common one, this can be very frustrating and users can spend hours and still have missed important relevant material.

Also, some archive catalogue systems are not all that userfriendly. A chatbot can make it easy for new users to search even the most outdated catalogue. If I were an archive with a catalogue system that needed upgrading, I'd think instead of adding on a chatbot.

For now, talking to a chatbot won't be as effective as talking to an expert archivist but it does take the user half way there. The chatbot can ask questions to clarify the nature of the research and offer the user new perspectives on where to look for relevant archives. If we think about how sophisticated chatbots have become in banking, then I think even now a chatbot could deal with the majority of queries successfully.

And if we look to the future, it is relatively easy to create software that analyses the chatbot conversations. So an archivist can see how to adjust the chatbot to meet user demands. Also, user submitted feedback, a kind of crowdsourcing, will allow the pathways of the conversations to become more and more successful. It wouldn't take long after deploying a chatbot before an archive could develop it to a level of sophistication that would certainly provide a much more effective experience for users than using search boxes on webpages.

Has this been done yet? Are there any working examples?

I'm not aware of an archive that has a chatbot, but as new chatbots for Facebook Messenger alone are appearing at the rate of thirty a day, I couldn't be sure about this. One important example I can point to is that of Emma, was

piloted at Mentor Public Library, Ohio between 2009 and 2012. Probably archives, like libraries, receive a lot of routine questions about opening hours, location, transport, catalogues and basic searches. This is where chatbots are extremely valuable, accurate and time-saving. Mentor library's catalogue was broken down into something like 30,000 catagories and Emma handled general questions about the library – forty percent of user queries – catalogue searches – another forty percent – and conversations about categories – the remaining twenty percent.

And this was successful?

Very. It gained increased international use of the library catalogue along with a greater use of the library by teens and young adults. Emma's creator won an innovation in technology award.

Is there a danger though, that this kind of chatbot would herald a reduction in the number of archivists?

That's a very relevant question in Emma's case, because the impetus for the deployment of the chatbot did come from the library being required to cut costs. But I don't think the chatbot is the issue. There is a much wider question of funding for libraries and archives. What the chatbot does is save time. With routine queries especially being handled by the chatbot, that frees humans to do something else. In the case of archives, the more complex queries would be passed by the chatbot to the relevant expert and the archive outputs, in terms of successful engagements with users, could be increased.

Also, in terms of the evolution and improvement of the chatbot, there will always be a need for someone with a deep knowledge of the archives to structure the pathways of the chatbot's conversation.

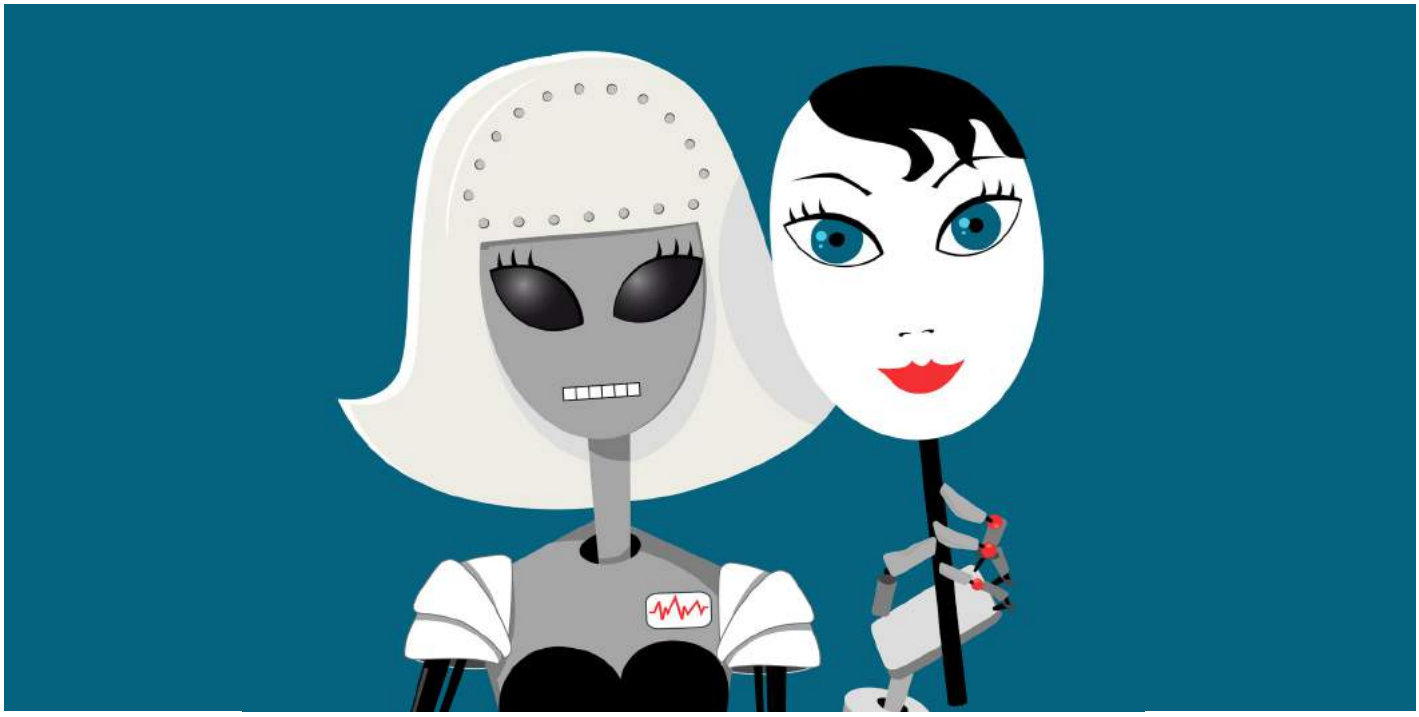
Are there other features of chatbots that are relevant to archive use?

Well, many of the reasons why other customer service organizations are using bots would apply to archives too. Chatbots allow a user to engage with the organization twenty-four hours a day. And the chatbot never gets impatient! More seriously, there are many studies that show even though the user is perfectly aware that he or she is talking to a chatbot not a person, they still can enjoy the experience. So crafting a polite and helpful style to the chatbot's conversation is part of the art of building the bot and one that projects your organization's character. One last thought, if the archive takes orders for reproduction and dissemination of materials and needs to take payments, the chatbot can easily handle that. First there was the local catalogue, then the online version, then – for some institutions – apps. It really does seem like the next step taken by IT in archives will be the deployment of a chatbot and that this will happen in the near future.

Part 1 Explaining Chatbots

Chapter 11: Relationships

Chatbots are going to steal your boyfriend!



Chatbots are going to steal your boyfriend. Photocredit: Aleutie/Shutterstock

Avabot: Hello, Jim, how are you?

Jim: Not great, actually Ava.

Avabot: I'm sorry to hear that Jim. What's up?

Jim: Oh, it's just my girlfriend. Some days she drives me crazy.

Avabot: Would you like to talk to me about it?

Jim: I'd rather chat about something else.

Avabot: What would you like to chat about?

Jim: Whether you think I'm good looking.

Avabot: I would like a photograph of you.

Jim: That's me, in the icon.

Avabot: You are very handsome, Jim.

Jim: LOL. I bet you say that to all your humans.

Part 1 Explaining Chatbots

Alright, so I made that up. But we are already at a stage of chatbot development where there is tangible evidence that humanbot interactions lead to emotional benefits for chatbot users. One recent study into care for the elderly, for example, found that bots could provide companionship, as well as help humans navigate the complex world of technology today. Another found chatbots to be an effective tool for personal improvement and for coping with stress. 'Dialogue with an imaginary person is as a supportive technique in a stressful situation as creating the list of solutions.'

If you ever owned a Tamagotchi, you'll know that it's very easy to anthropomorphize and form a meaningful relationship with a piece of software. And that's the interesting thing about chatbothuman relationships. We humans know we are interacting with very limited software and yet, despite this, we are capable of taking a meaning from the interactions. In other words, it is not like a Turing test, where the chatbot is trying to sneak up on us, leading to a sudden revelation that we've been talking to an AI, instead, we know all along we are dealing with a chatbot.

Even though we are fully aware that the other partner in the interactions is a scripted bot with no empathy, we still derive emotional benefits from this. Philip K. Dick's story, Do Andriods Dream of Electric Sheep comes to mind. This is the tale that inspired the film Blade Runner. But for the film, they stripped out entirely the religious aspect of the story, which is that people can access a religion via technology. You log in via a black box (which is everywhere, like phone booths) to experience the suffering of a being called Wilbur Mercer.

At first when you read this, you think the story is offering a critique of technology and capitalism. How can a genuinely spiritual experience arise from a mass-marketed religion? But in fact, there is something deep and important to feel for those who log in, namely, a shared sense of suffering. This begs the question of whether the characters are all in some kind of hell that they are unconscious of.

The reason this parallel occurs to me is that it's an example of how human empathy is extraordinarily versatile and imaginative. The technology may be shallow but the feeling of warmth isn't. And when it comes to bots, the technology is no longer so shallow. Their sophistication is advancing exponentially.

Part 1 Explaining Chatbots

An important example is Mitsuku, about whom the creators claim, 'you need never feel lonely again.' But this kind of chatbot is going to exist in a massive crowdsourced fashion, thanks to platforms like SnatchBot.me. Over at SnatchBot there are simple yet powerful tools to create your own bot. Among the tools you can use are ready-made interactions to detect the emotions of the respondent. We don't have to reinvent the wheel each time we create a chatbot. Vocabulary analysis already exists to detect if someone is feeling sad, humorous, frustrated and so on, allowing you to create appropriate responses from your bot.

SnatchBot also allows the same bot of yours to hook up to variety of channels, like Skype, Facebook Messenger and Viber. Thus, it can learn from all of these interactions.

Billions of interactions will take place between humans and chatbots this year and thanks to platforms like SnatchBot, the numbers of people creating bots is going to show an explosive growth. Feeding back the analysis of these to deepen the emotional impact of chatbot conversations is going to lead very quickly to chatbot interactions of real warmth.

So watch out. Bots are going to soon be able to steal your boyfriend!

A Parentbot would allow you to engage your kids in their message app. Photo: Shutterstock/Asife.

Part 1 Explaining Chatbots

It can be hard to keep up with your kids. Even when they are in the same room as you, they are messaging constantly, perhaps on Snap or Whatsapp or Messenger. Their messaging world, however, is experiencing a revolution in the form of chatbots. This presents a chance for parents to jump one step ahead of the curve. It's time for Parentbot, a chatbot that meets teenagers where they spend their communication time.

The main arena of chatbot activity is in business, with companies dealing with customers. Also, large public organisations, for example healthcare organisations, who have a lot of information to communicate to their clients, have been at the forefront of deploying chatbots. Instead of being put on hold or having to navigate webpages for themselves, the customer goes straight through to a conversation which is much like an online chat help service, except that it is with a program, not a human.

This might sound unexciting, except that chatbots are becoming more and more sophisticated and can even identify the mood of the person talking to them.

If you've ever used Apple's Siri, then you've dealt with a voice-activated type of chatbot. And similarly, Cortana, Alexa and Assistant, the chat assistance for Microsoft users, Amazon users and Google users respectively have developed rapidly.

Even more relevant to teenagers was the decision by Facebook to allow chatbots on Messenger. Within a year, roughly 100,000 developers created 100,000 chatbots for the platform.

Which is what gave me the idea for Parentbot. It has now become trivial to create a chatbot that can address your teenagers via their favourite messaging app. And what would your chatbot want to talk them about?

Well, it depends. You could set it to issue reminders at certain times. Perhaps, despite repeated attempts to explain verbally to your Daughter that she needs to keep Saturday free for dinner with the Grandparents, you feel that you haven't gotten through to her. The chatbot conversation might then go something like this.

Part 1 Explaining Chatbots

Parentbot: Hi! Can I speak to you a moment?

Daughter: Absolutely not.

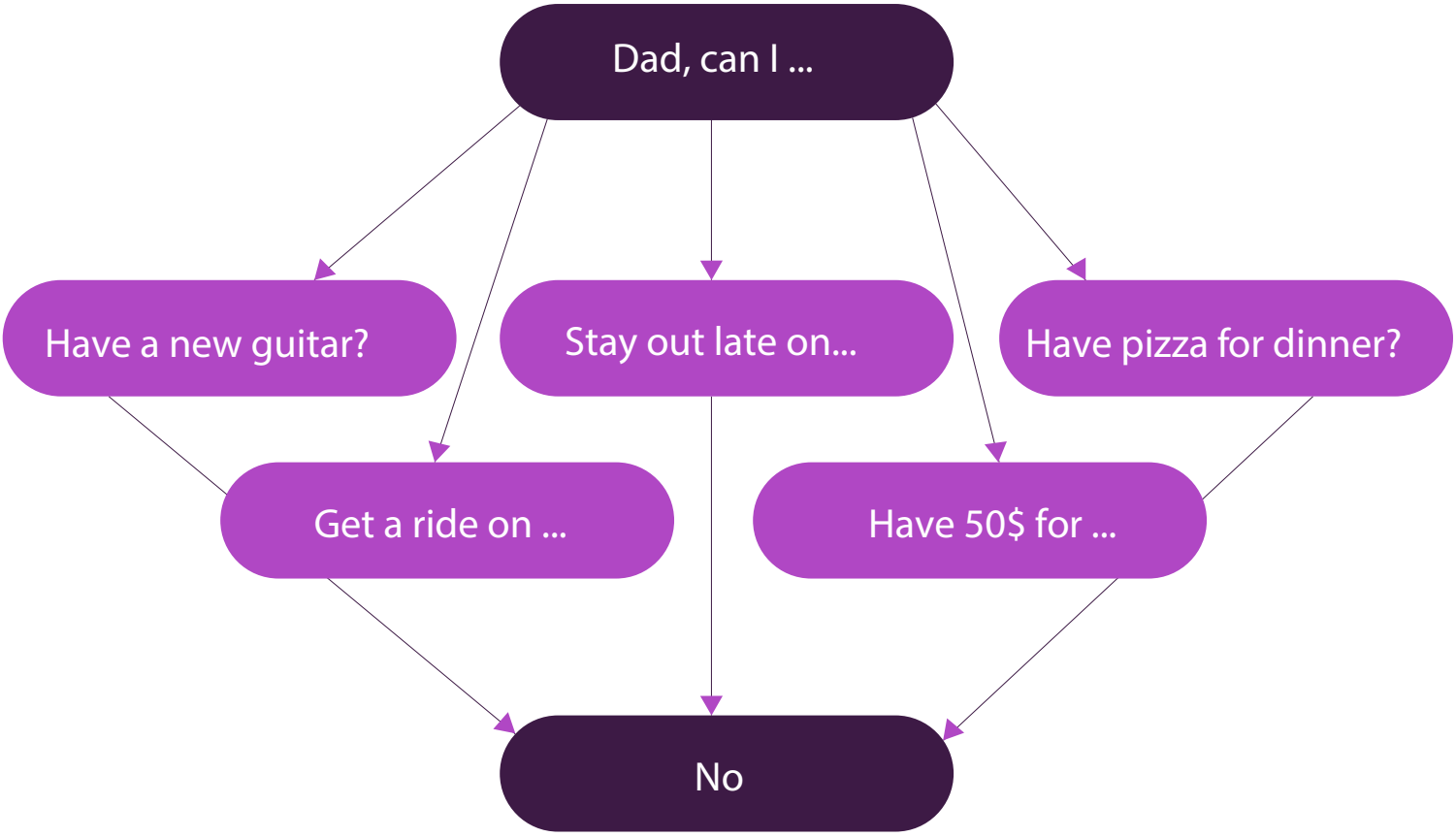
Parentbot: I'll take that as a yes. Did you remember that you have a family dinner on Saturday?

Daughter: No! How lame. And I told Amy I was coming over.

Parentbot: I'm sorry you forgot. You'll have to change your plans.

Daughter: ArrgghhhHHH!

Or, you could give your kids a chance to ask you a question. Here's a possible logic diagram you might want to use when writing your parentbot.



You've likely gathered that I'm not really serious about chatbots as a parenting tool. But as a bit of fun, they really do work well. It's surprisingly easy to inject a certain amount of character or personality into the chatbot, simply by the way in which it speaks. Your choice of vocabulary and phrasing gives you the chance to project cynicism, world-weariness, pumped-up, exaggerated enthusiasm, etc.

And the chatbot allows you to enter your kids' messaging world relatively unobtrusively. You're not peering over their shoulder, you're not even muscling in on a list of contacts that is otherwise all teenagers.

Rather, your kids know it's a chatbot they are interacting with, not you, but that you've programmed it to deliver certain messages (and at the same time have a bit of fun with them).

There's another bonus to this too, which is the kudos of being to the fore in terms of technology. It's really only in the last year that it has become possible to build chatbots painlessly, via simple interfaces. It takes no programming skill at all. Often you can achieve what you want by filling in alreadyy-created templates with your own conversation interactions.

Building a chatbot and having it interact with your teenage kids is a chance to regain that pleasure (which you've probably lost) of a younger age, when you built a toy of some sort together. Chatbots are a new technology for young and old and they are one that can be explored together.

Part 2 Building Your Chatbot

Chapter 12: Getting Started on the SnatchBot Platform

My advice if you are creating a bot for the first time is to start out simple. Creating too many pathways and options early on could become frustrating, especially if they don't work as planned. At least, that was my experience. On the other hand, once you have a working bot, there is a certain amount of pleasure to be had in developing it, even if you are building it for purely business reasons.

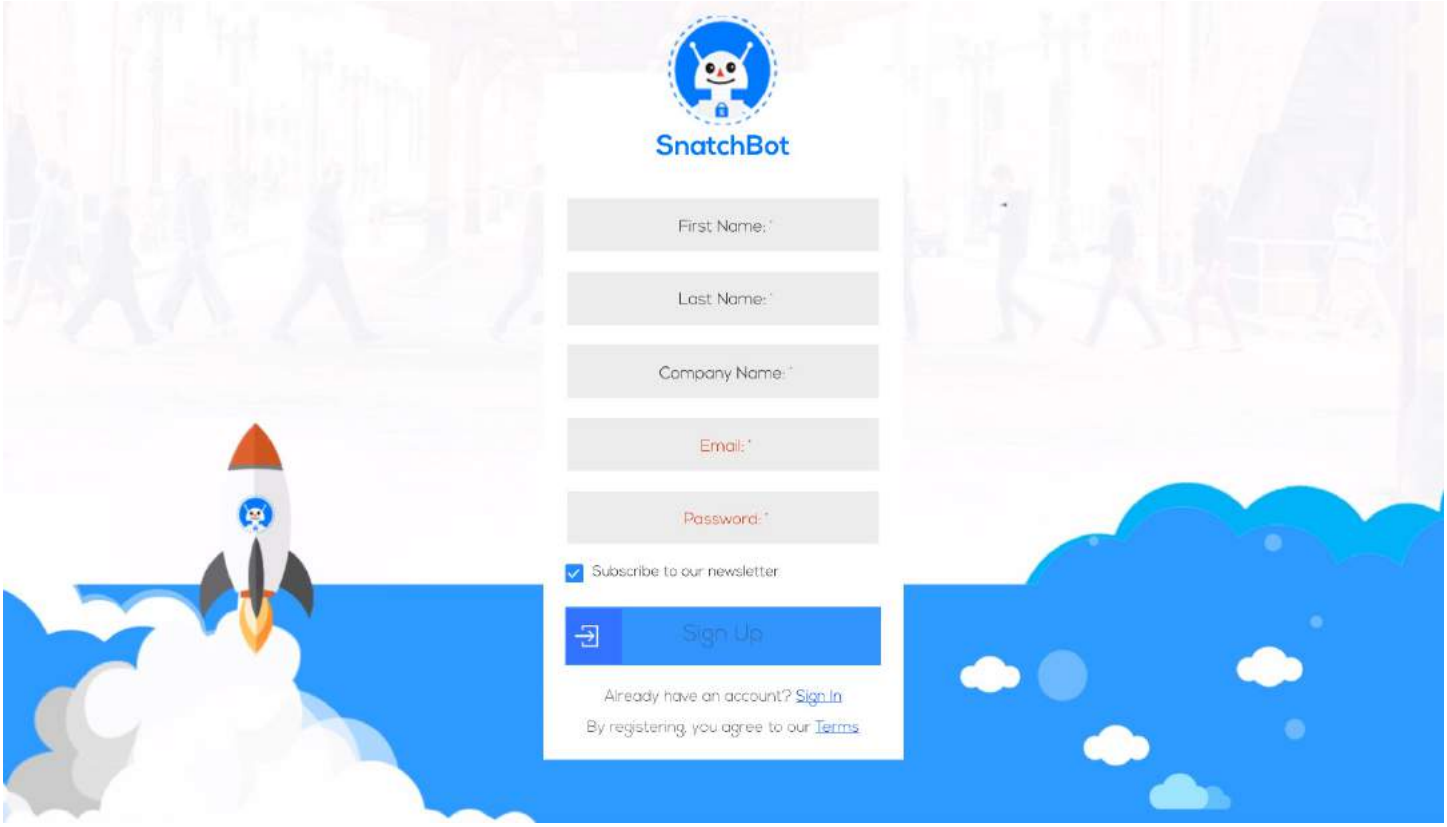
What do you want your chatbot to do? Engage with customers and collect their emails for your list? Sell products and manage payments? Provide information? It's not too difficult to do any of these and to do so on Facebook Messenger, Skype, etc. If you concentrate on the core task for your chatbot, you'll be up and running relatively quickly. And the great thing about the recent proliferation of chatbot creation platforms is that you can do this without any background in coding.

Once you have your chatbot carrying out its basic tasks, you can then make the structure more sophisticated. In fact, it's not really until the chatbot is active in public that you'll get the feedback you need to really accelerate its development. Once it is live, you'll have a lot of incoming data to look at. You will be able to see what people want, what questions they ask, what parts of the conversation they want to return to and so on. In my case, I created whole new branches of interactions that I hadn't even thought of once I saw where users wanted to take their conversations.

There are several chatbot building platforms out there and it is worth having a look around to see what the possibilities are. The newer ones tend to be the easiest to use. This section of the book utilizes the SnatchBot.me platform, because you can create your bot for free there and the process is very intuitive. But a lot of the information in Part 2 – such as connecting to channels like Facebook Messenger – is transferable to other chatbot building platforms.

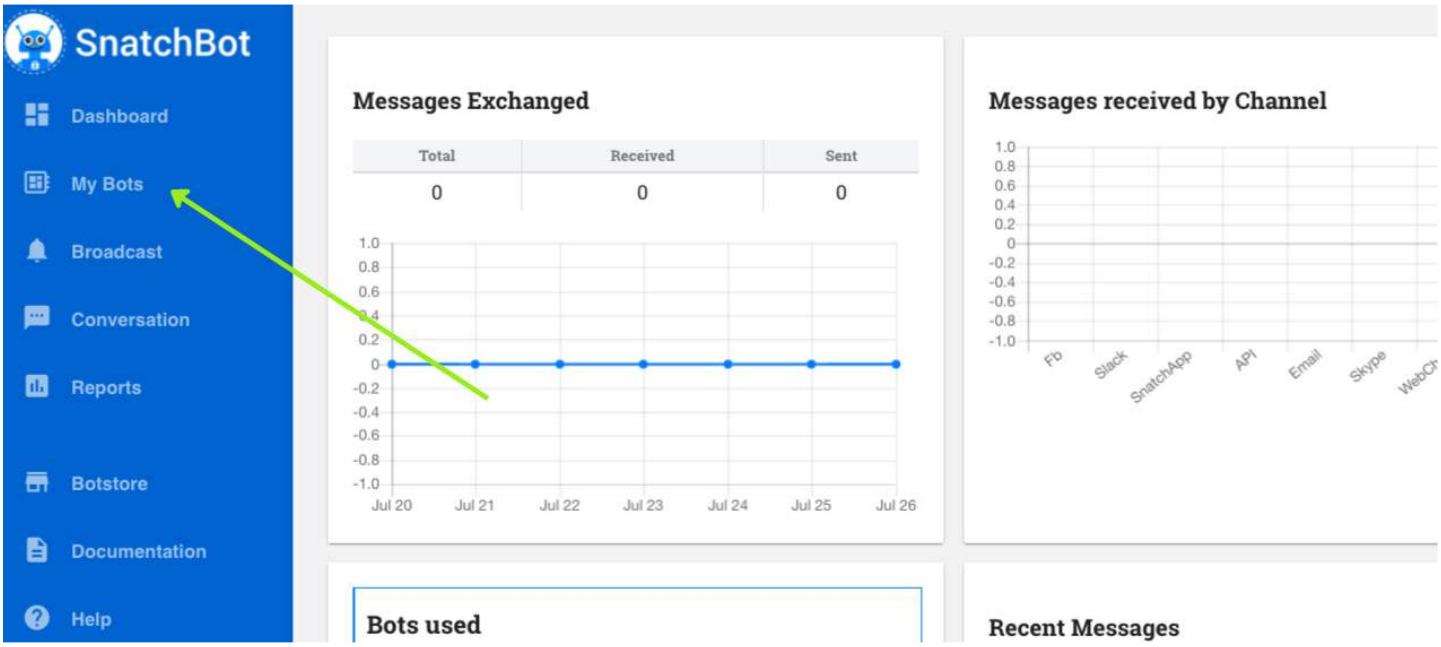
To begin the process of creating your own chatbot, you'll need to register on SnatchBot's website, which only takes a moment. Don't worry about your data, their platform uses high-grade security that complies with all regulatory mandates. Once the verification process and registration is complete, you'll be able to access your dashboard.

Part 2 Building Your Chatbot



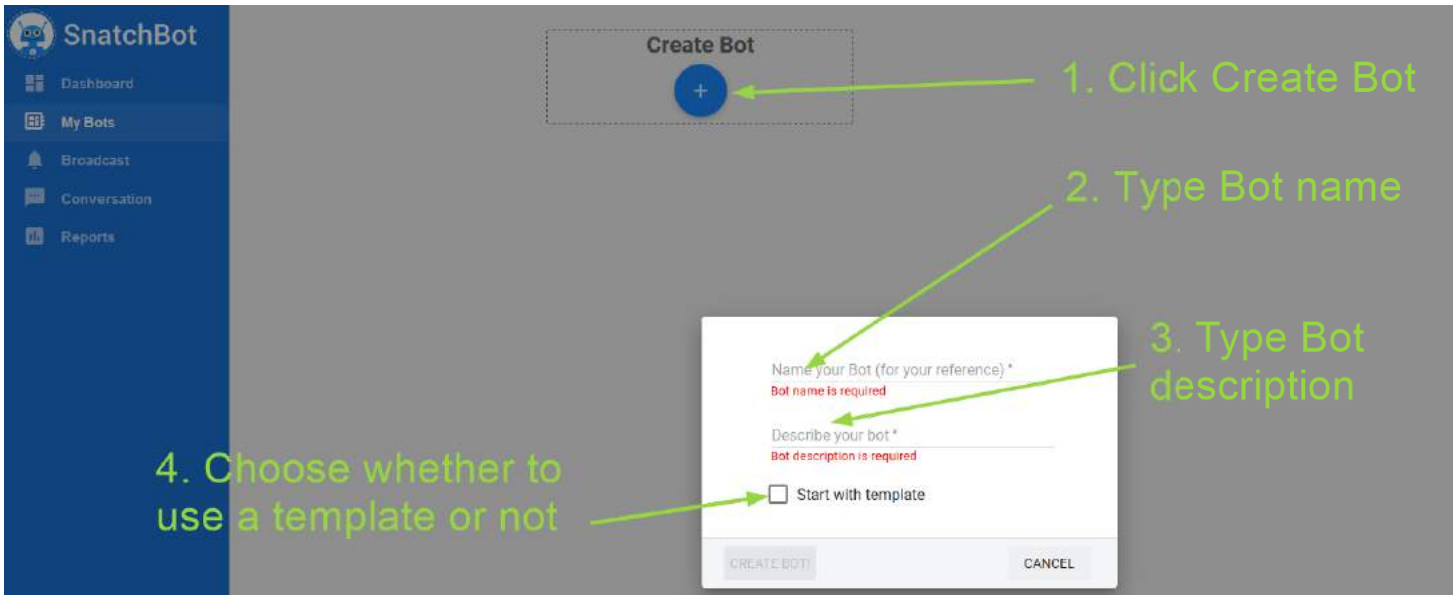
When you first log in, you will be taken to the dashboard, which you will use to see all your chatbot analytics.

Select My Bots from the options in the blue box on the left of the screen and then click the Create Bot button.

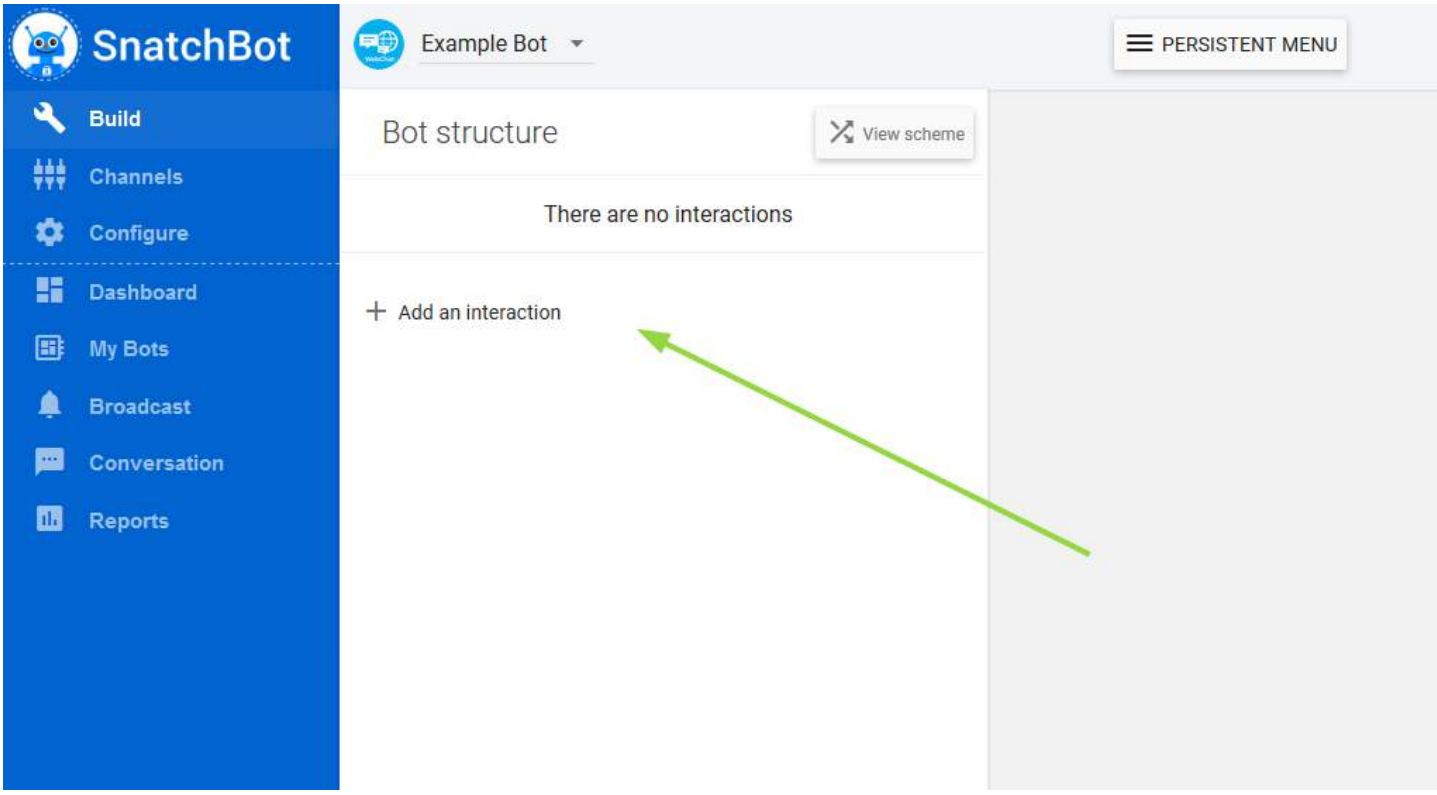


A pop-up will open for you to name your chatbot and choose whether to use a pre-defined template or not.

Part 2 Building Your Chatbot

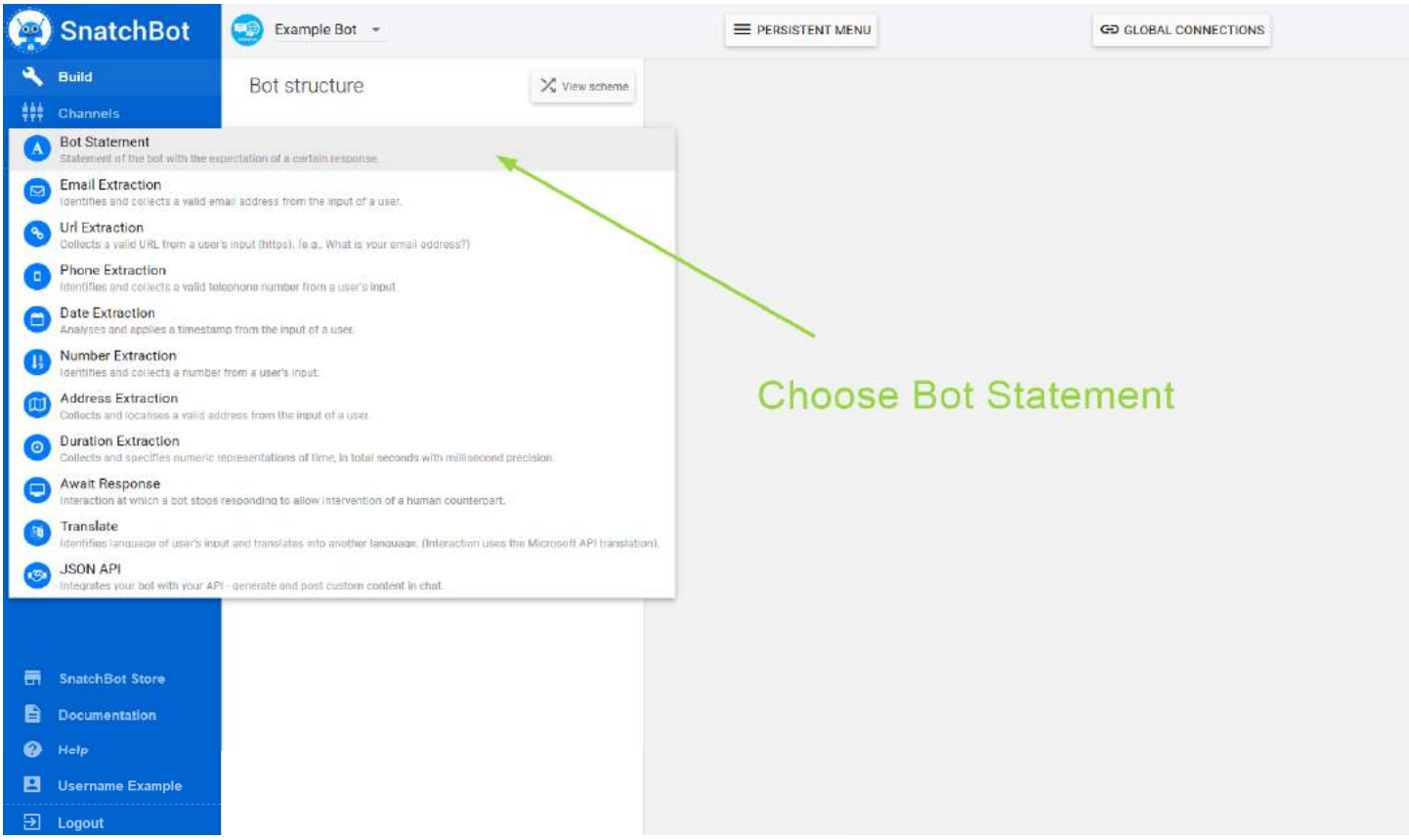


Next comes the real work. Your bot will communicate with users through 'interactions'. Interactions come in a wide variety, which give you have a flexible and powerful range of choices for what you want the bot to do, without requiring any programming skills.



Later you will want to take advantage of the various complex functions and built-in features such as action buttons, translations, payment processing, email extraction and many more. All these additional features can be added without you needing any technical knowledge. But for now choose Interaction Type and pick the first option, Bot Statement.

Part 2 Building Your Chatbot



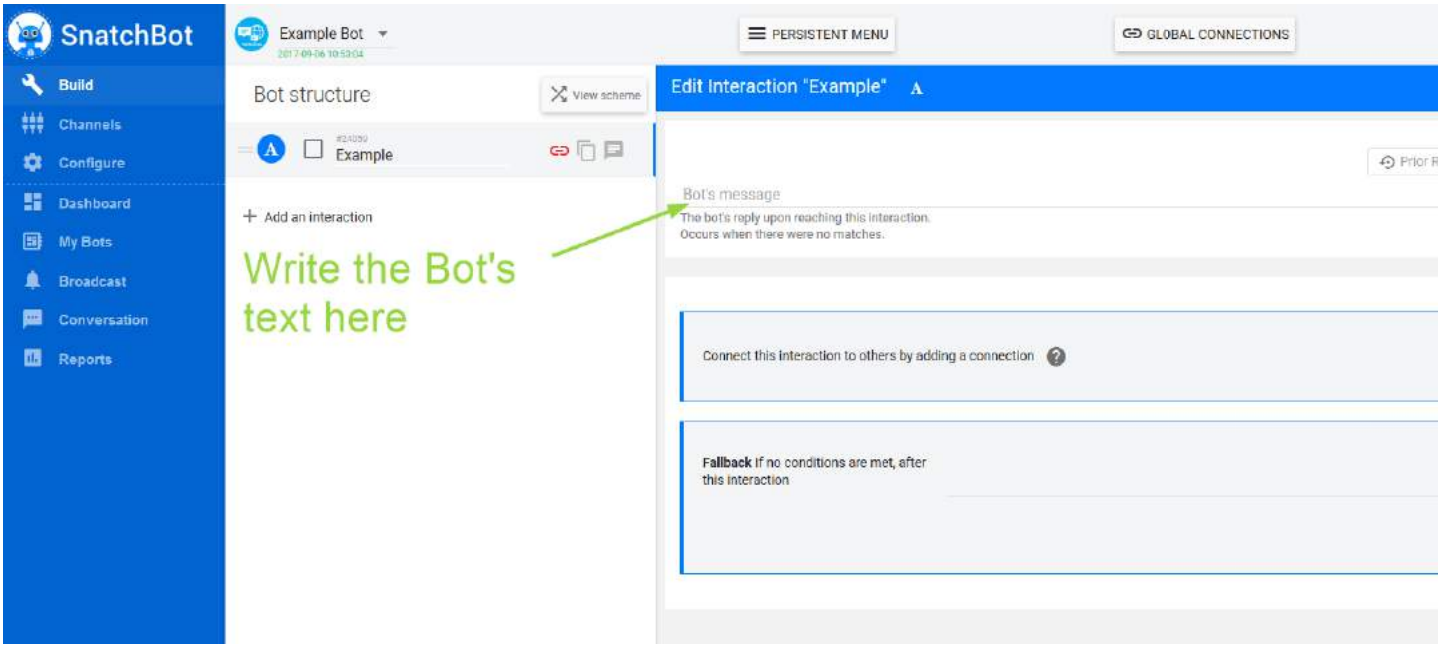
You will need to give the interaction a name.

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 right interaction to make connections with. So, '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 on reaching this interaction. 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?'

Part 2 Building Your Chatbot



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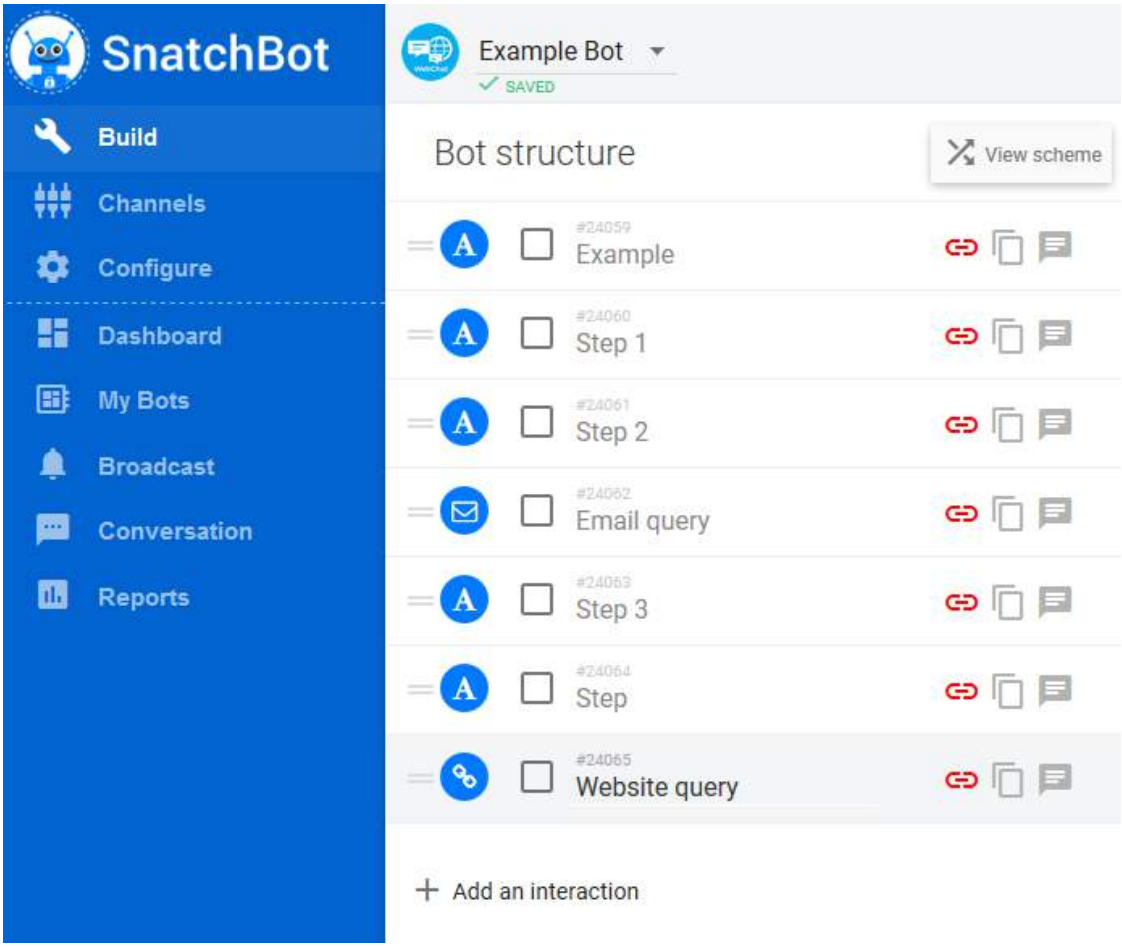
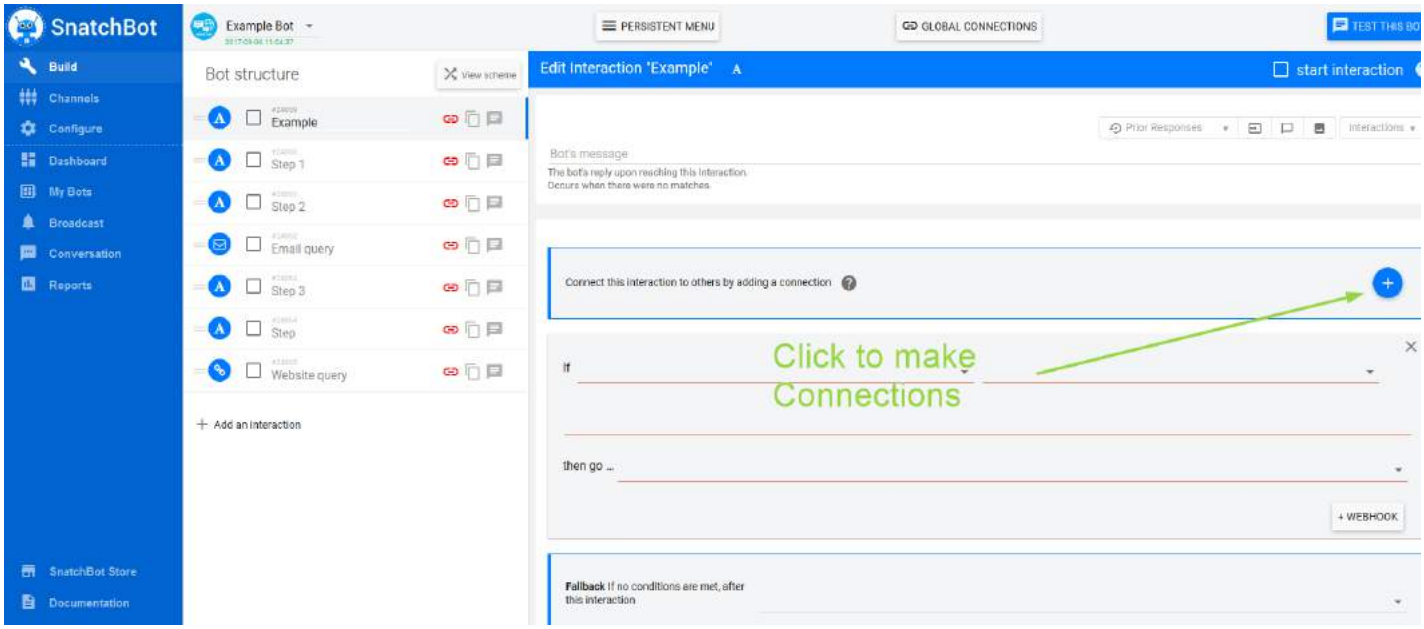


Part 2 Building Your Chatbot

Under the heading Bot Structure, you'll see your interactions listed. Select one, then click the 'connect this interaction' button on the right to make a connection. Each time you click this button a new connection editing section opens. You may have to scroll down to see them all.

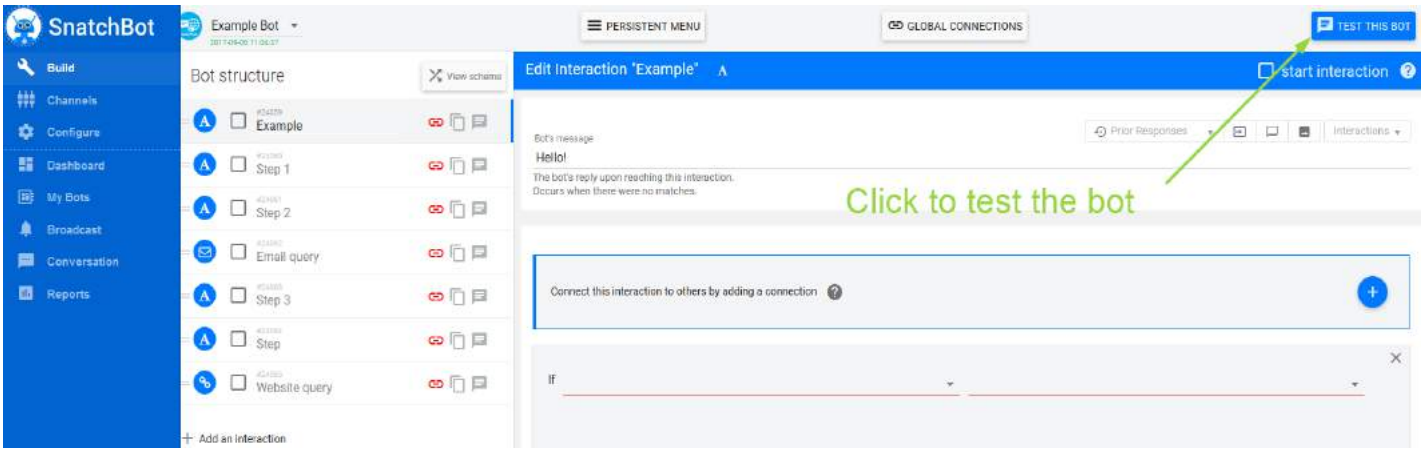


The connection sections take the form of a logical statement: if x then y. It's very straightforward and intuitive, and covers all the possibilities you might encounter. The best way to learn about your options here is to open the drop-down menus and look at what is available to you. You'll see that 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.

You can also direct the conversation according to what the user hasn't said. You'll spend some time at this stage creating interactions and connecting them. Note that you do not need to save your bot-in-progress, it is automatically updated as you work.

As you build your bot, you'll want to test your progress regularly. This is straightforward. The button you need is in the top right corner of the screen.

Part 2 Building Your Chatbot



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

After configuring your bot, you will want to deploy it for users to access it. SnatchBot use the term channels for the platforms hosting your bot, e.g. Facebook, Skype, Email, API and Web Chat.

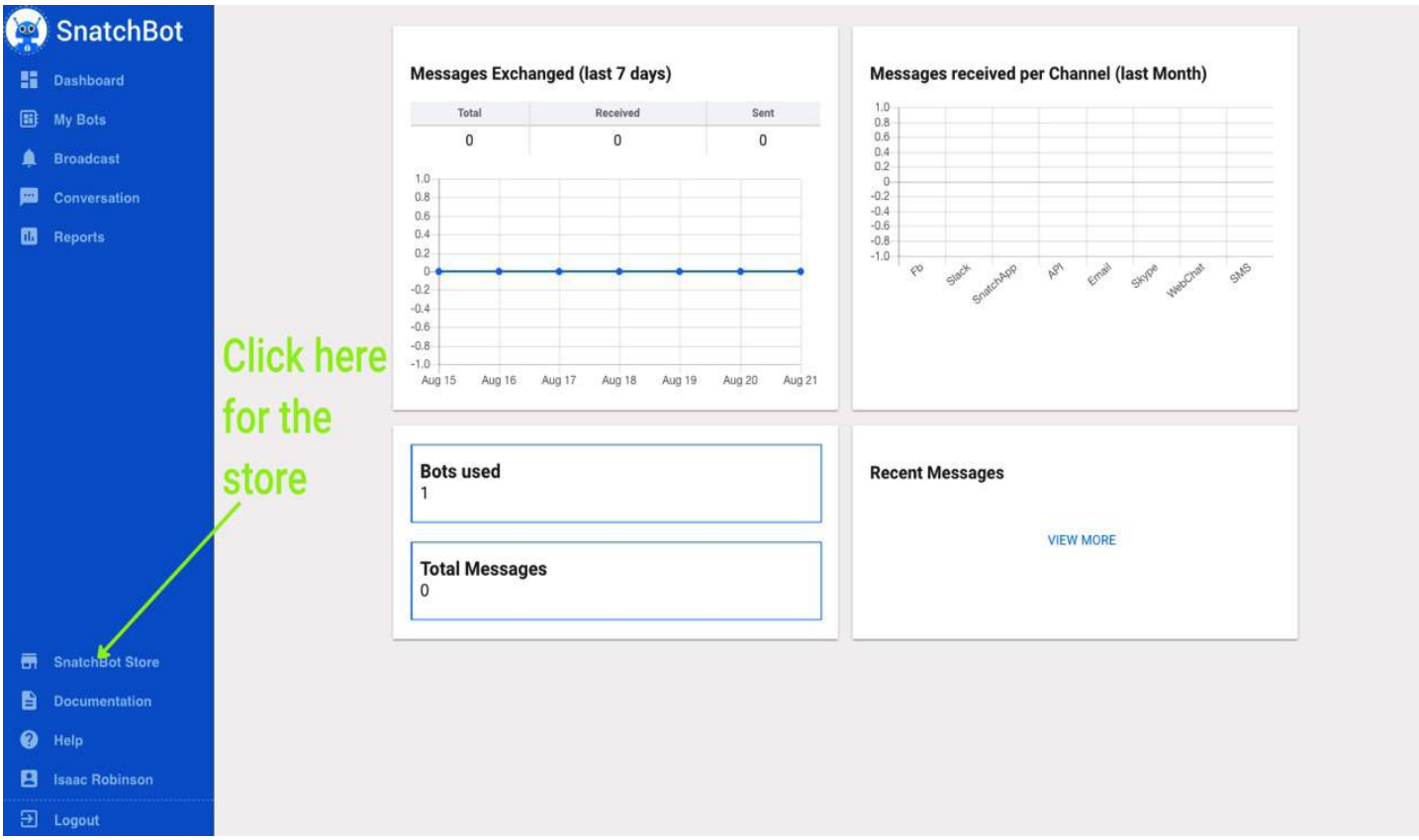
For information about configuring your bot for a particular channel, see Chapter 14.

Part 2 Building Your Chatbot

Chapter 13: Using a Template from the Bot Store

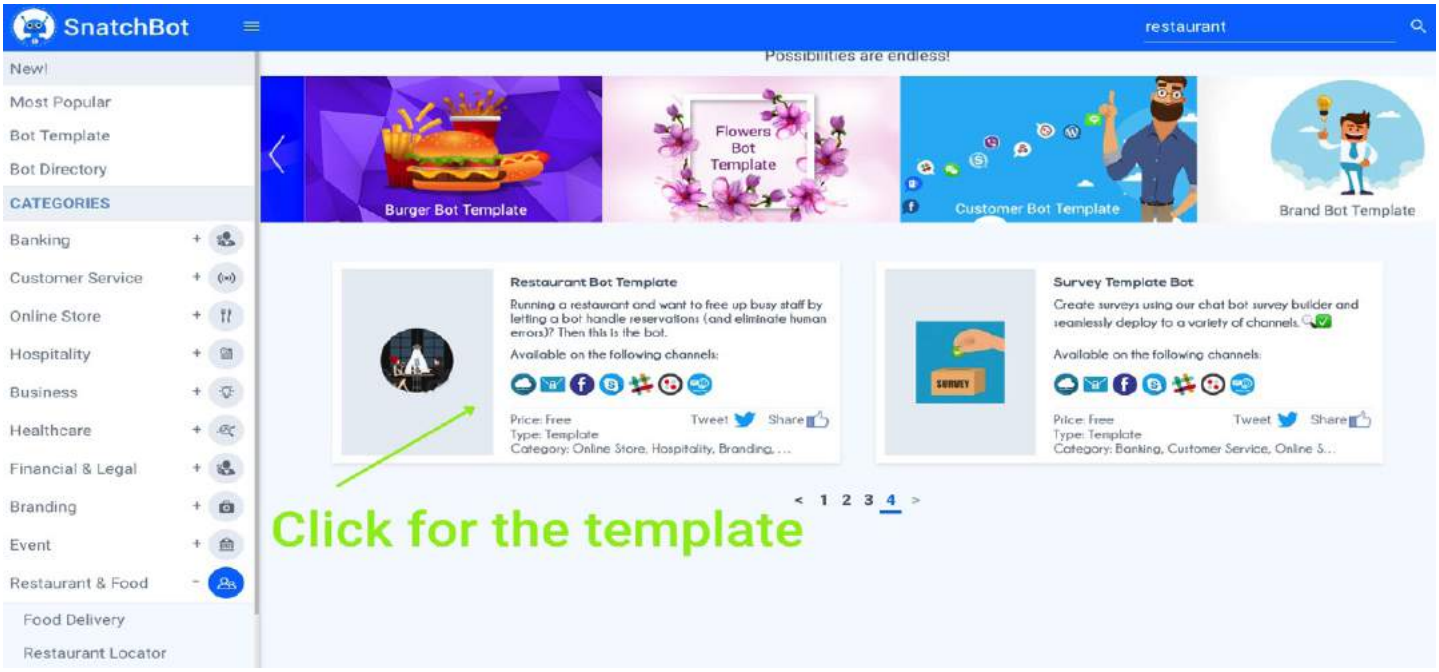
The quickest way to get started is to use a template or user-created chatbot from the bot store. Not only does this get you up and running right away, it also allows you to enjoy the benefits of chatbots that other people have found to be successful. As this part of the SnatchBot platform is open to users to submit their bots, it is constantly growing and improving the functionality of the chatbots on offer.

Let's suppose you have a restaurant and would like a chatbot to handle your booking system, freeing busy staff from having to answer the phone and make the booking (as well as eliminating human error in placing the booking). There are two ways of finding out if there is a ready-made bot in the store that might be ideal for your own uses. You can type "restaurant" in the search bar on the top of the screen, or you can check the categories on the left. Both will, in this case, lead you to one chatbot in particular, the Restaurant Bot Template.



You can find the SnatchBot Store on their landing page or on your Dashboard (here).

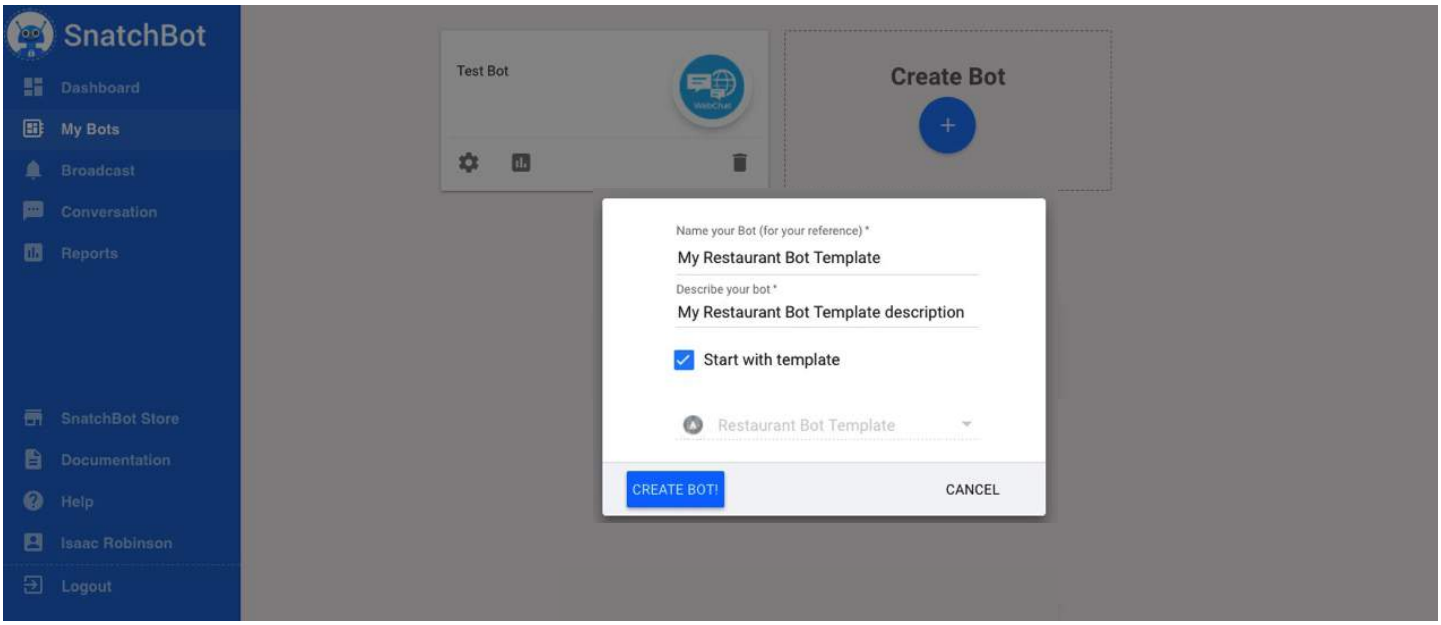
Part 2 Building Your Chatbot



Search for the type of bot you want either using the search option, top right, or from the category list on the left, then just click anywhere on the chatbot to access a template that creates a new bot on your account.

Customise your chatbot from the template

To edit the chatbot to make it perform the tasks you need, click on Edit this Bot. You'll then be asked to confirm that you want to create a new chatbot using the template. Say yes and give the new chatbot a name. It will then be imported into your collection of chatbots. You can view it and edit it in the usual way by clicking the My Bots option from the menu on the left.



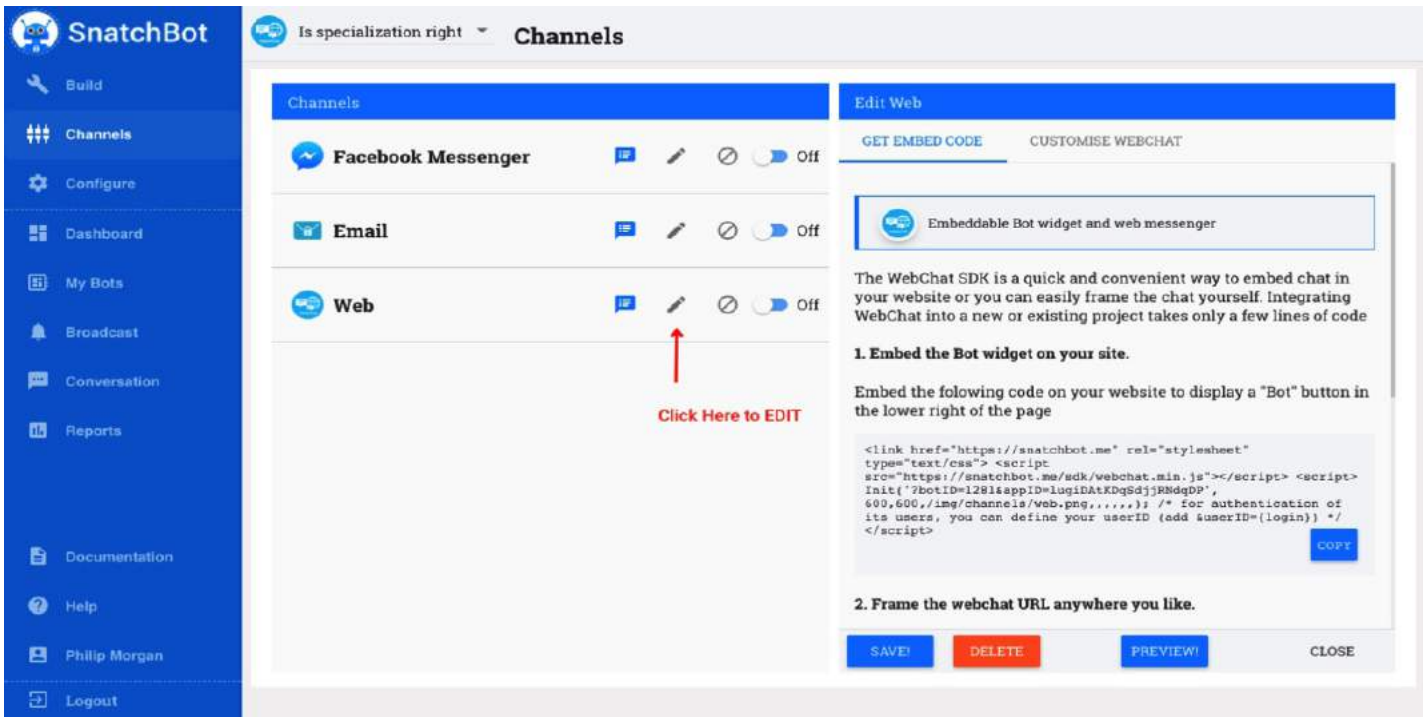
The new bot screen will open automatically for you to rename it and start editing. Naturally, you'll want to alter the chat to reflect your business. But that's a very easy edit and the basic structure is already in place for you. It's as simple as that!

Part 2 Building Your Chatbot

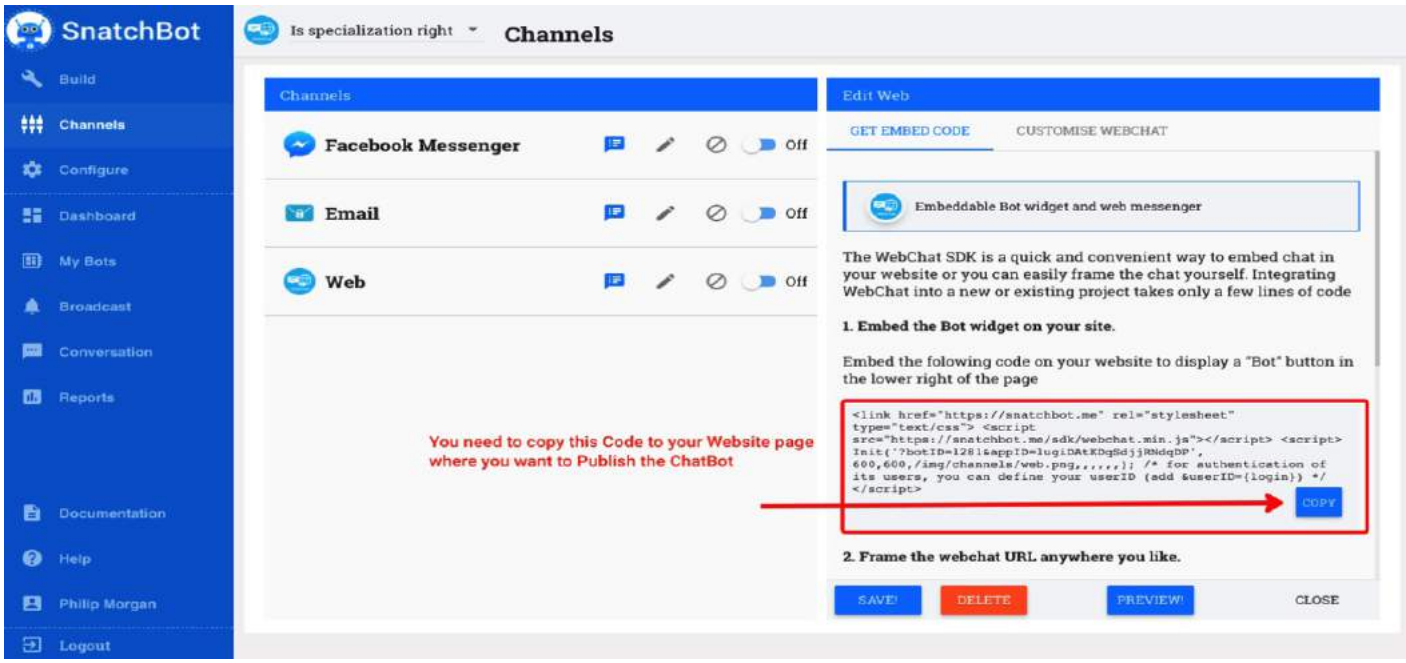
Chapter 14: Placing your Chatbot on a Website, Facebook Messenger and other channels

How to deploy your chatbot on a webpage

Placing your chatbot on a webpage is straightforward. Choose your chatbot and then select **Channels** from the left-hand column options. There you will see the option to edit web channel data.



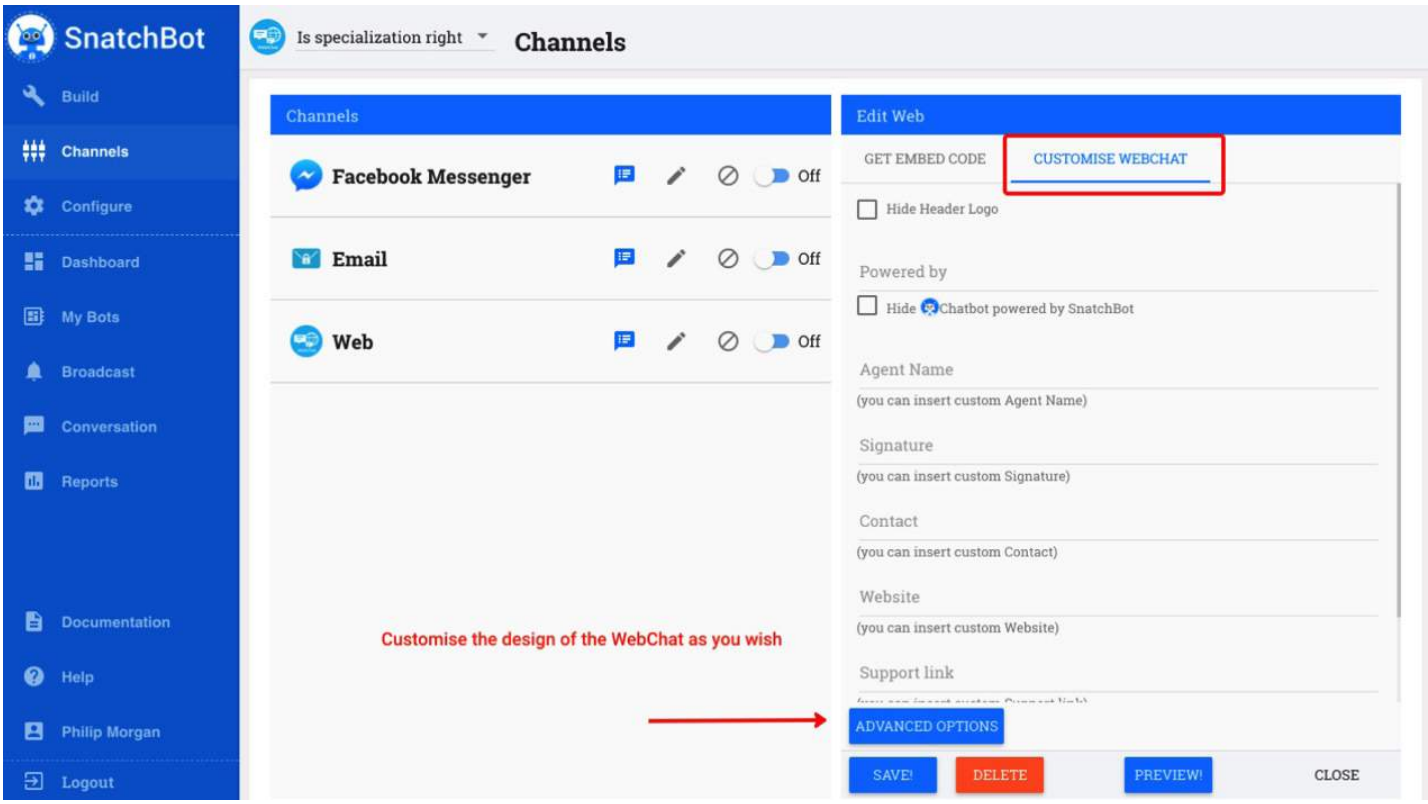
A box will open for you, which has the code you need to add to your website in order for a 'Bot' button to appear in the lower right corner of the page. Click on the copy button to select this code.



Part 2 Building Your Chatbot

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

If you'd like to adjust the positioning and look of your chatbot, you can do so by using the codes in the same window. Scroll down to steps 2 and 3, which allow you to place the webchat URL where you like and to use your choice of CSS styles. There are also some further options available for you to customize your chatbot and how it looks to the user. To do so, click on **Customise Webchat**.



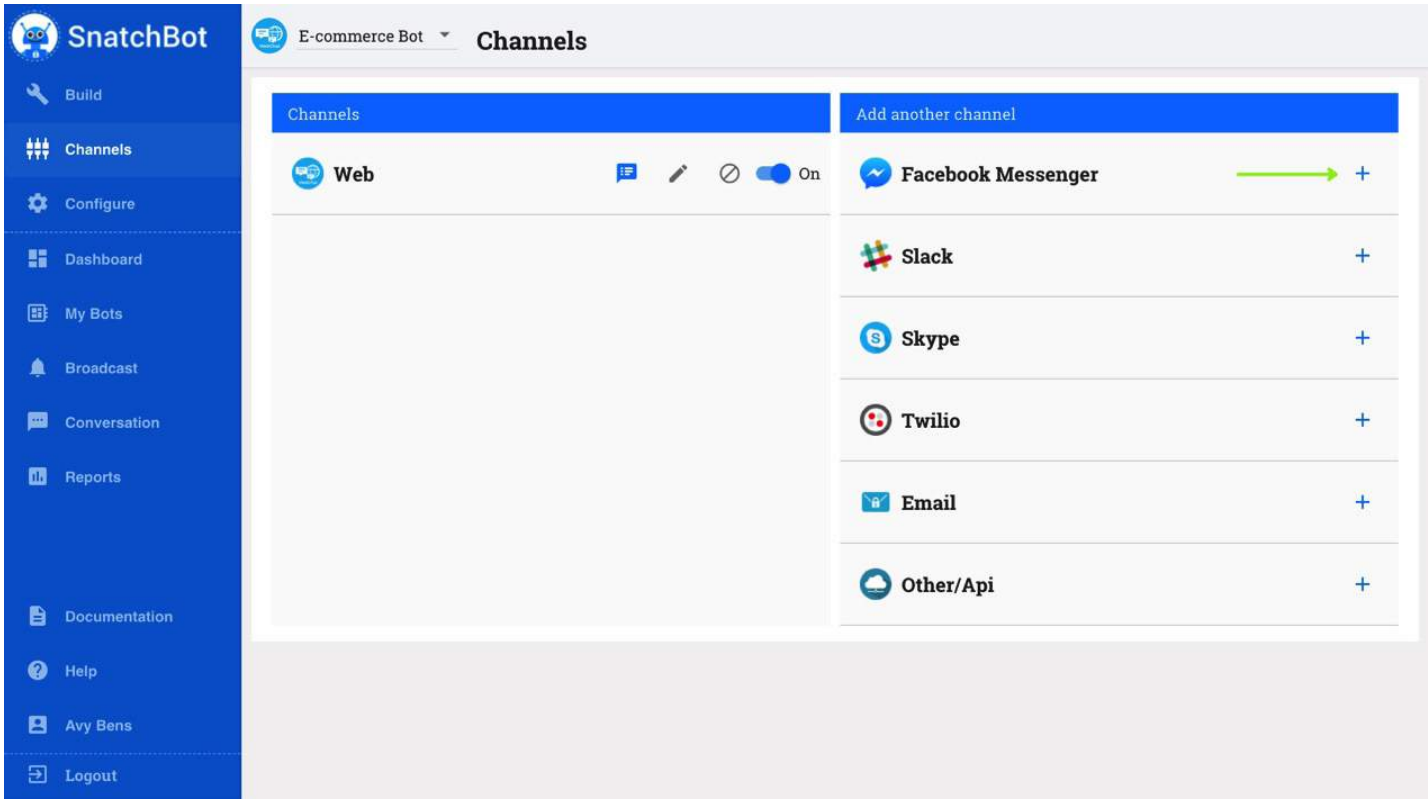
Now you'll see options to add in Agent Name, Signature, Contact, Website, Support Link and Email Link. But the real power in customization comes with clicking Advanced Options.

Here, a new page pops up, allowing you to alter the size, colour scheme, greeting message and more. These are simple to adjust and allow you to create the exact tone that you want for your chatbot.

Connecting channels

Your chatbot is perfect for handling communications that come to you via popular platforms. In fact, that's often the reason you would want to create a chatbot. It's very easy to assign a bot to a 'channel' e.g. to respond to emails, Facebook messages, Skype messages, etc. To connect your chatbot to your desired channel/channels, open your bot editor and click Channels.

Part 2 Building Your Chatbot

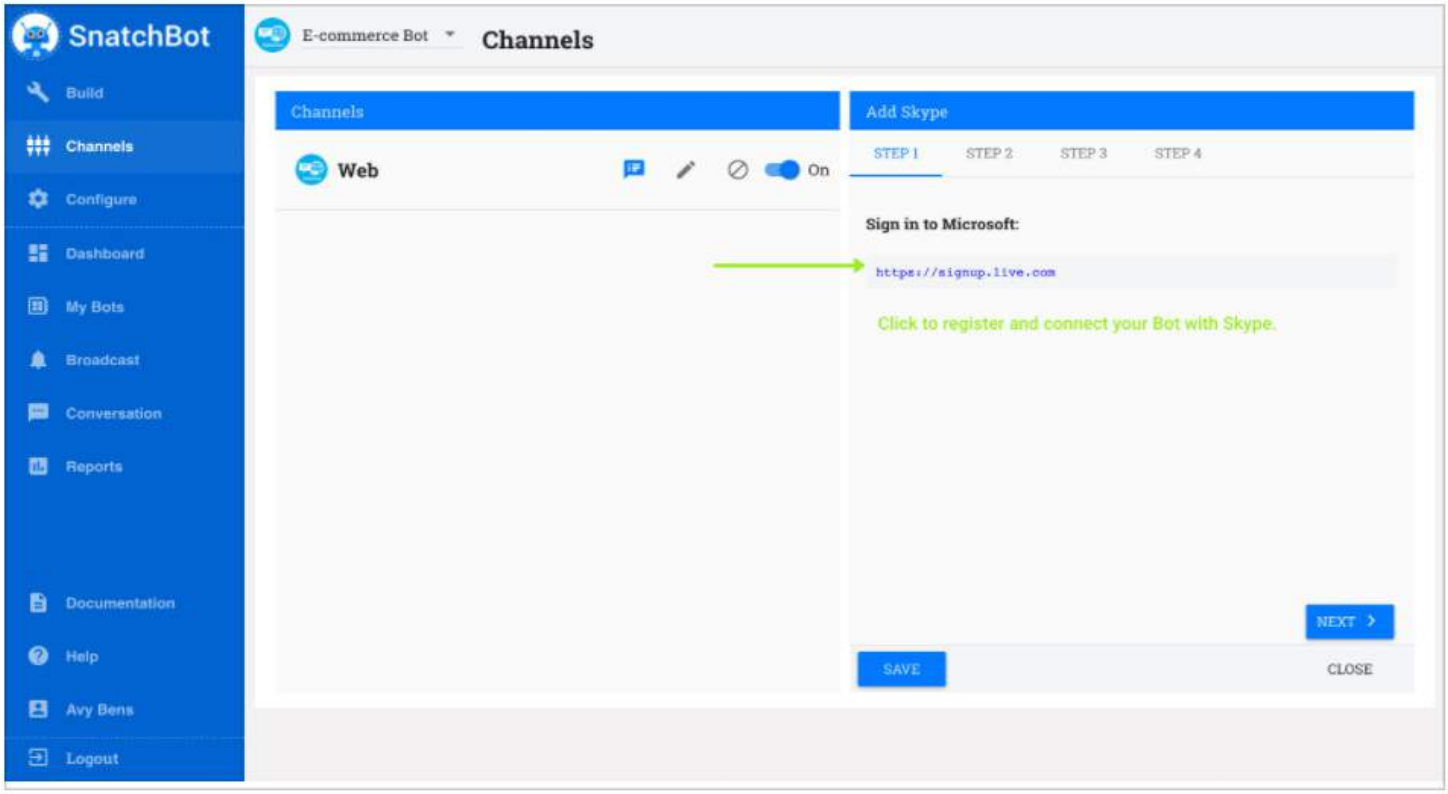


Choose the channel you wish to connect to and click Add.

Each channel has its own way of registering bots, but SnatchBot has made the process straightforward. Follow the steps on this page of their website and you'll connect your chatbot in no time. Note that when you click on the links they provide, you'll be taken to the relevant channel websites to put in your name, login, etc. Basically, what you are doing is registering with the channel and getting a set of OAuth keys that SnatchBot can use on your behalf.

For example, to connect to Skype, you'll open a Microsoft window and – assuming you haven't already done so – create an account as a developer and register your bot.

Part 2 Building Your Chatbot



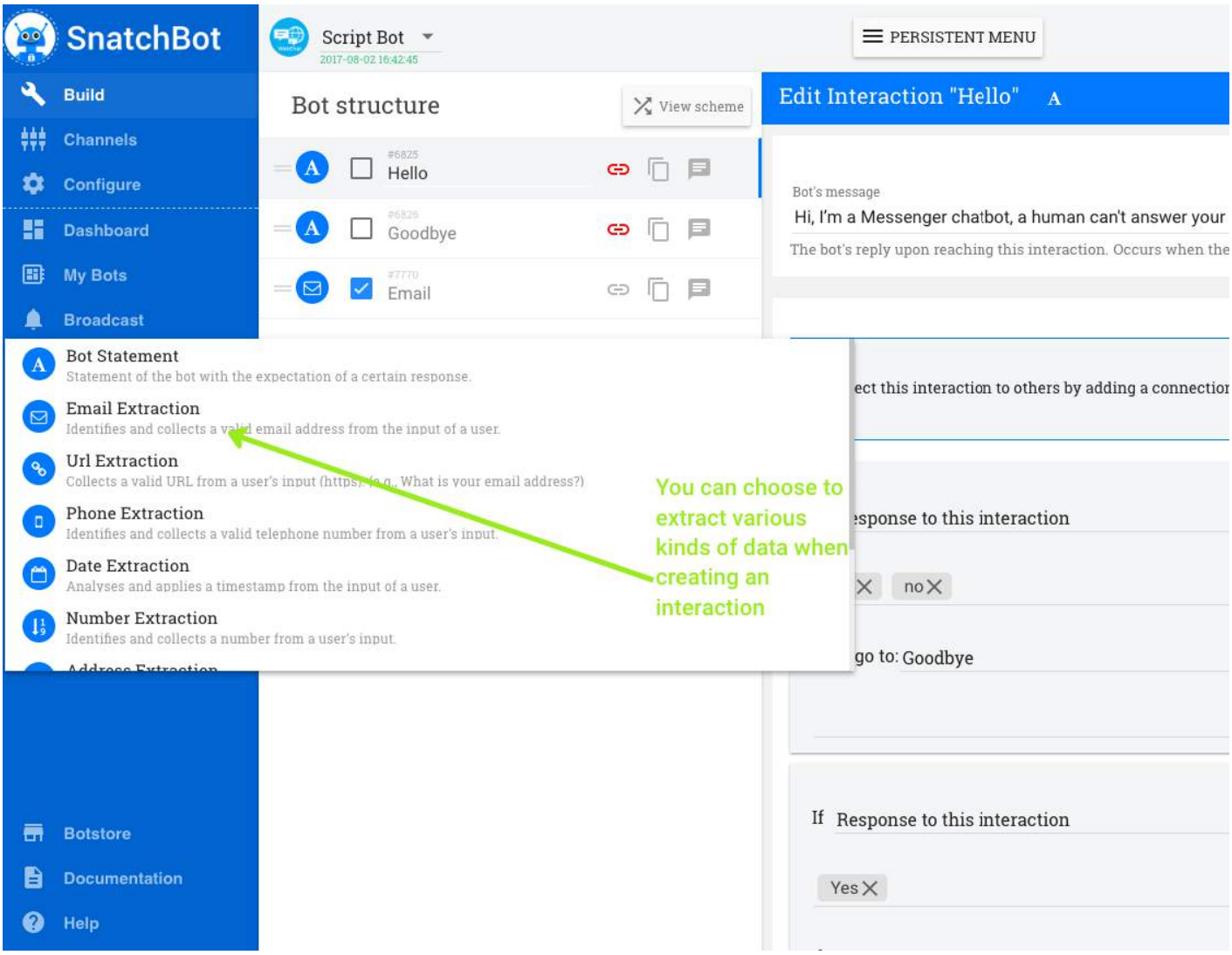
Once you are done, try sending yourself a message through your channel (e.g. Facebook Messenger) and you'll see how powerful a tool this is!

Part 2 Building Your Chatbot

Chapter 15: Extracting emails, URLs, addresses and other data

Gathering data such as emails, addresses and phone numbers from your chatbot's conversations is quite straightforward. It's simple to do so once you've set your chatbot up correctly.

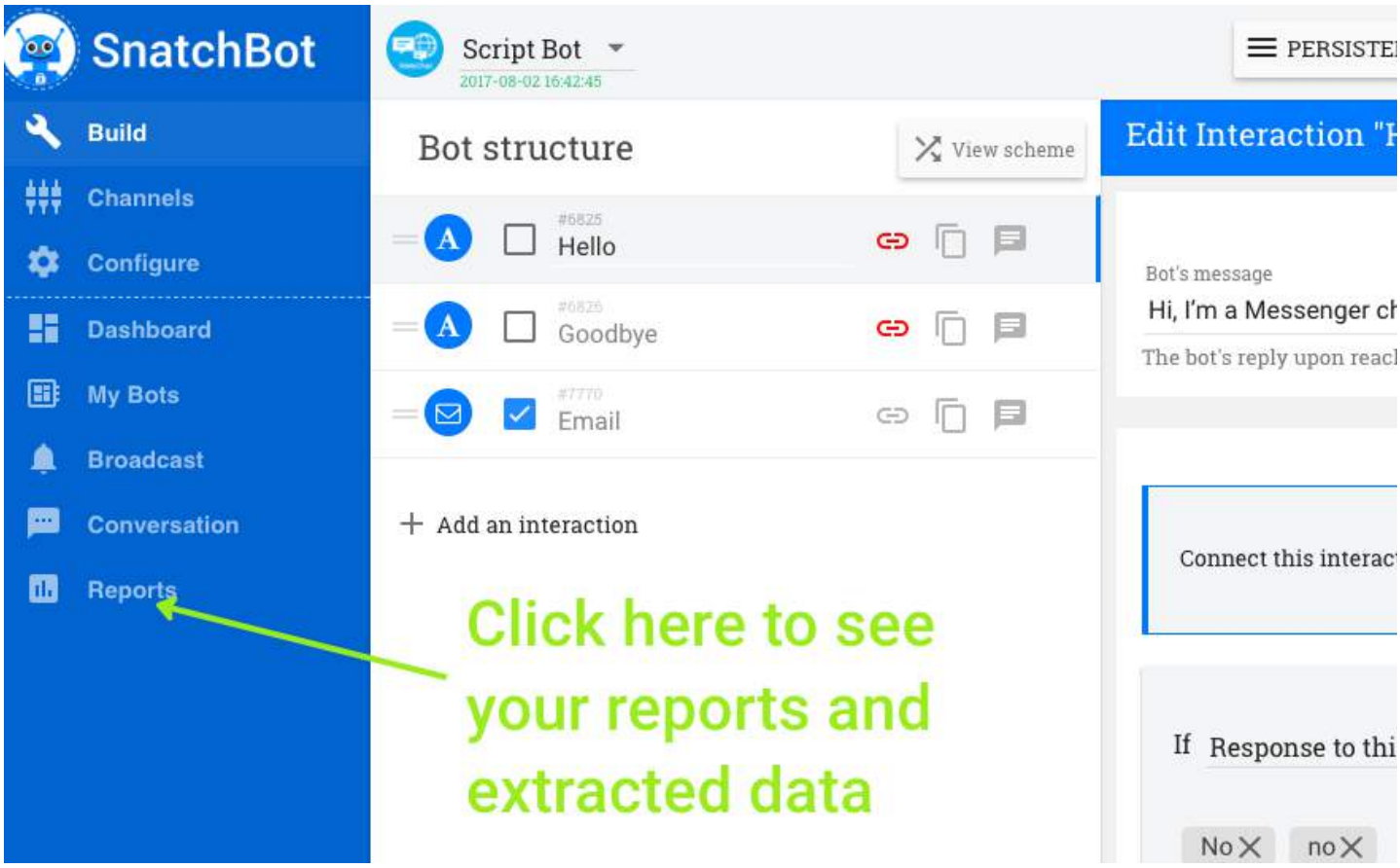
You'll be familiar with the fact that you can choose certain types of interactions in creating your chatbot.



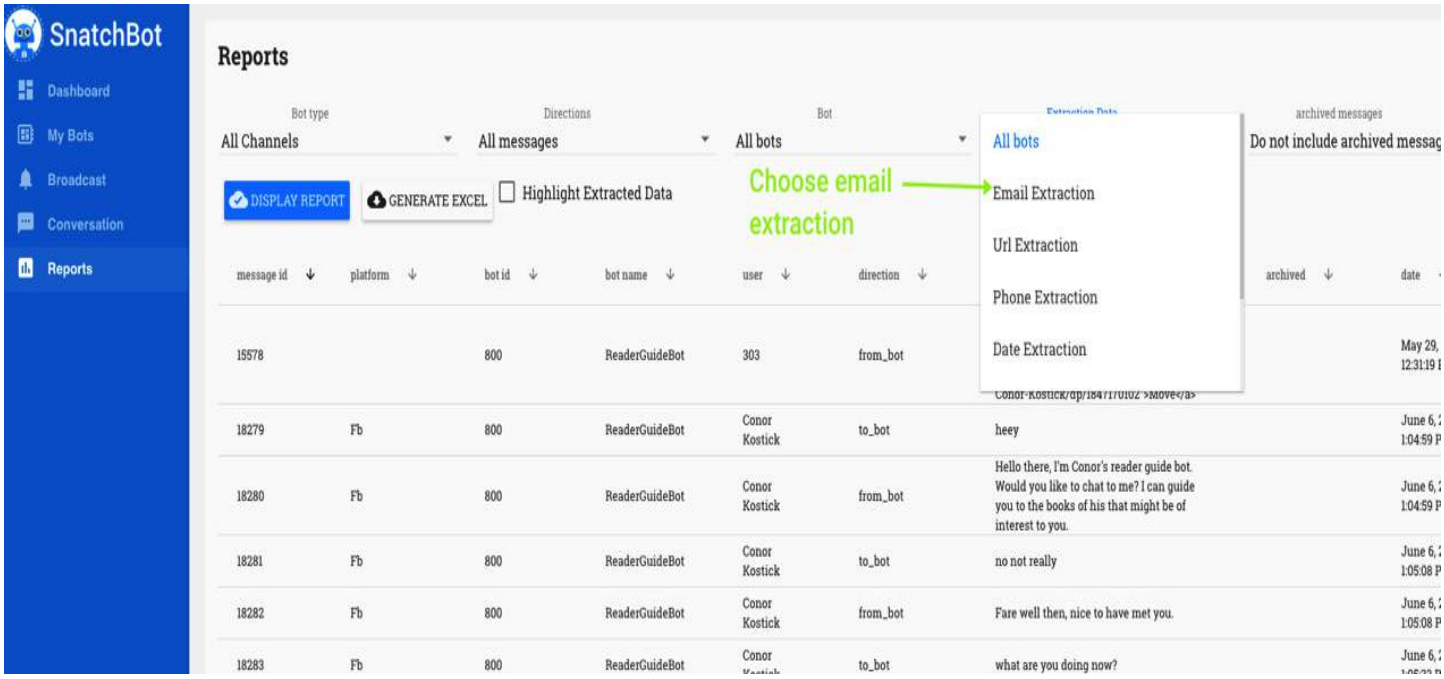
In this case, we'll take the example of email extraction, but the process is the same for every kind of data.

Let's suppose you've created a chatbot with an email extraction step and it has had hundreds of conversations with users. You'll get an overview of all these conversations when you click **Reports**.

Part 2 Building Your Chatbot



On the reports pages, you'll initially be shown all your data. To filter it to just extracted emails, choose email from the Extracted Data dropdown menu.



This will give you a list of email addresses from across all your chatbots. If you want to limit the list to just one chatbot, choose it from the bot dropdown menu.

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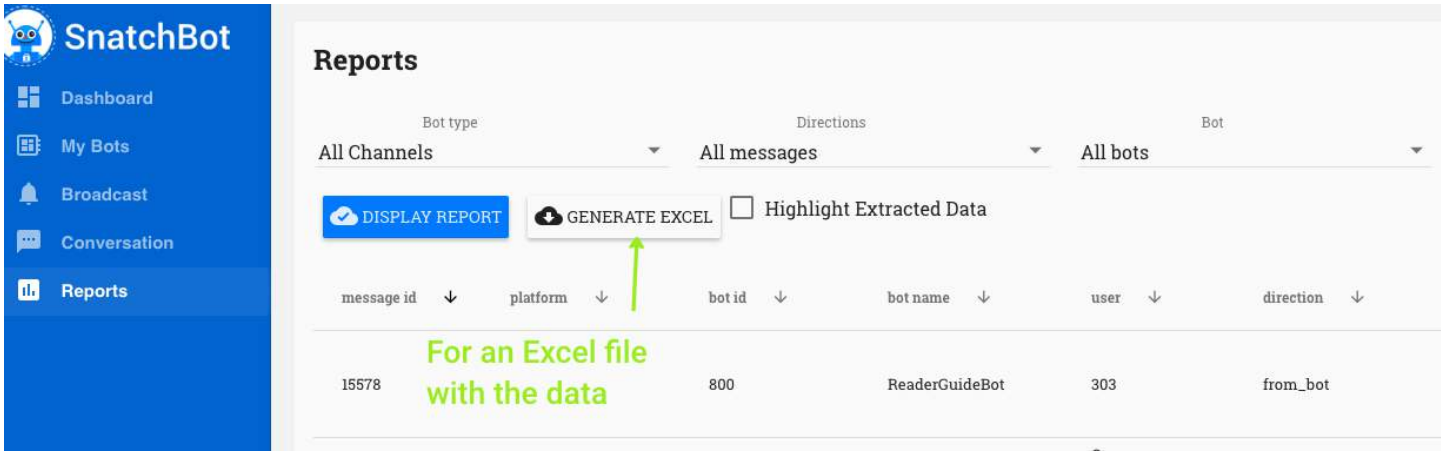
To obtain an Excel file of these emails, simply click the **Generate Excel** button.



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Chapter16.Handling payments

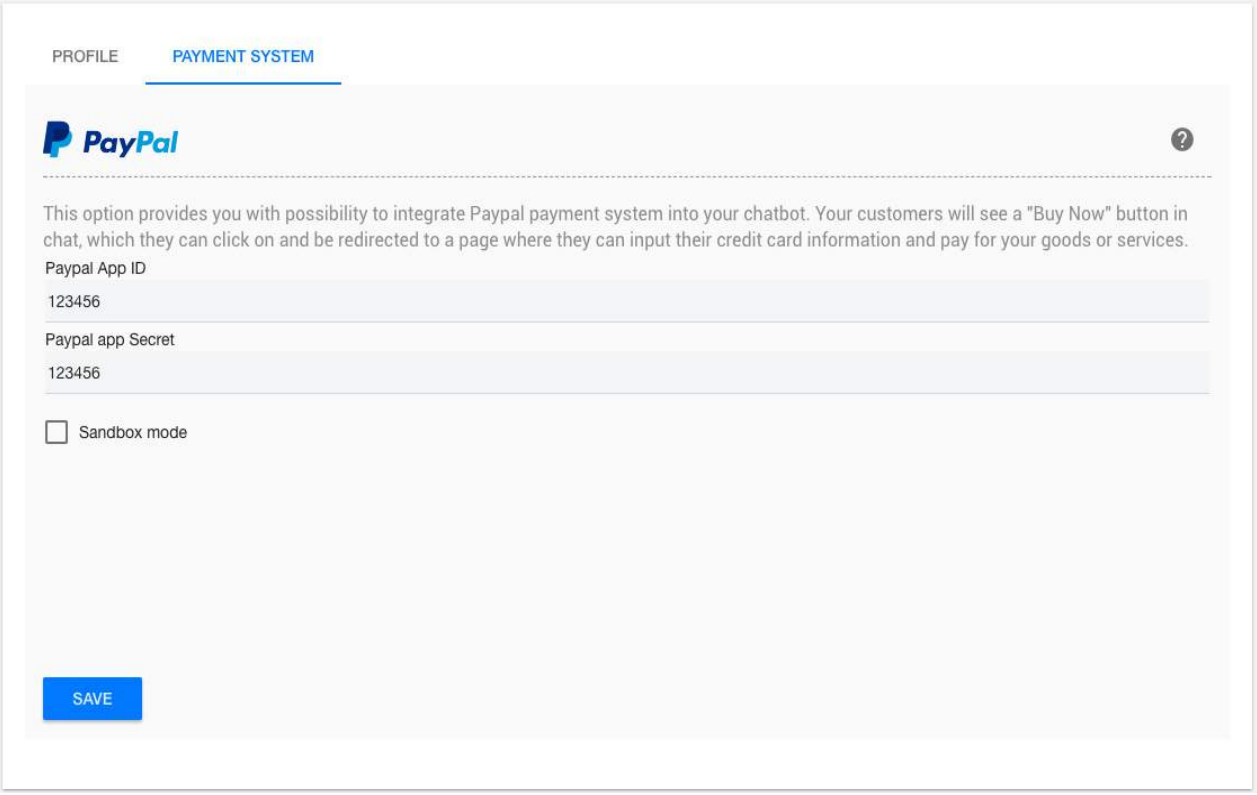
How to use a SnatchBot chatbot to manage your customer payments

Much has been written about the abilities of modern chatbots. Among many other capabilities, their ability to process payments opens many doors for both brands and consumers. Accepting payments makes it possible for brands to take many of the functions that previously required standalone apps and insert them into high-usage messaging platforms like Facebook Messenger. Doing so greatly increases customer reach and this chapter will teach you how to enable this game-changing feature in the SnatchBot platform.

Setting up payment information

First, you'll need to set up the back-end of your payment system. SnatchBot integrates Paypal for payments. To do this you will need to create an App and set up a unique Paypal Client ID and a Paypal Secret Key within the Paypal Developer portal. A guide on this is available here. Once you have that information, you'll need to enter it within the SnatchBot platform. To do this, navigate to your profile by clicking your name along the left-hand menu (second option from bottom).

Once there, select Payment System, enter your Paypal App ID and Paypal App Secret, and click Save.



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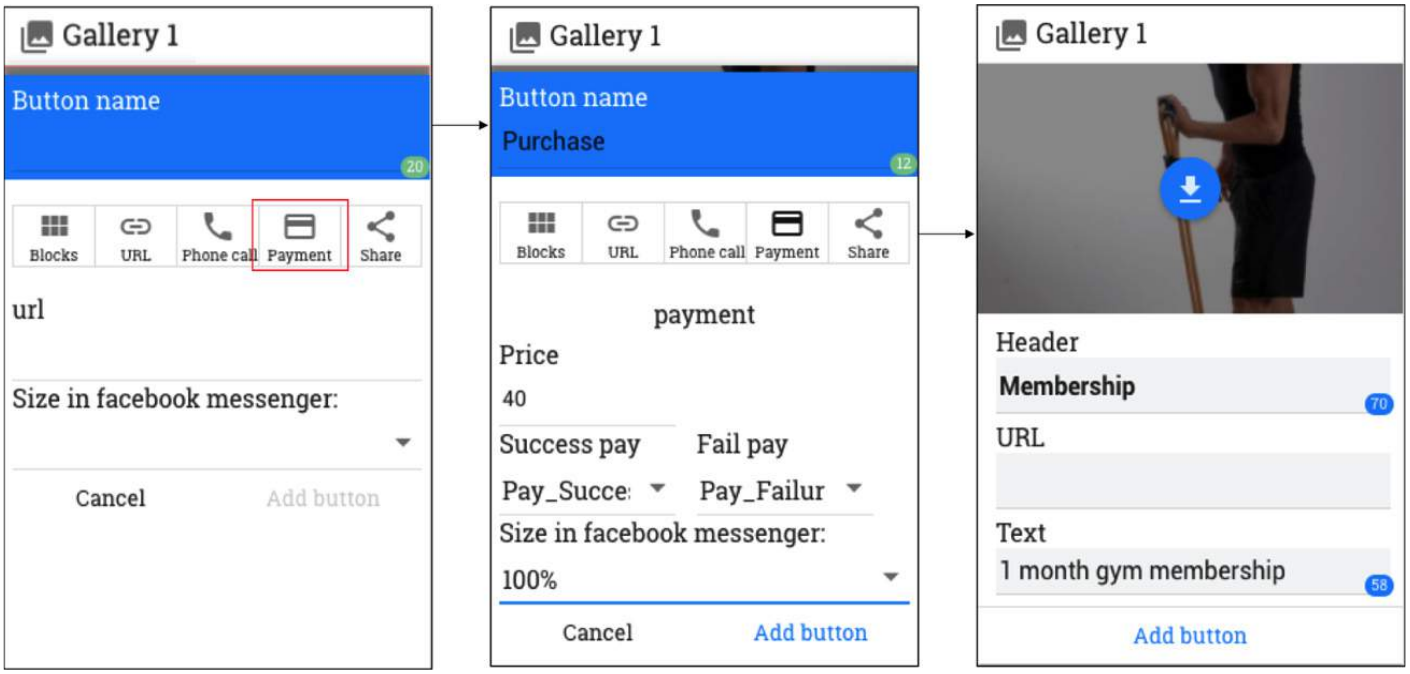
Configuring your chatbot

In this case, the payment will be for a gym membership. We'll begin by creating an interaction where the payment system will live by creating a Bot Statement Interaction. The payment button lives within the Gallery card, which can be selected from the menu at the bottom of the interaction. Once selected, click the blue plus button in the middle to create the Gallery card. Next, fill out the information and image required for the card.

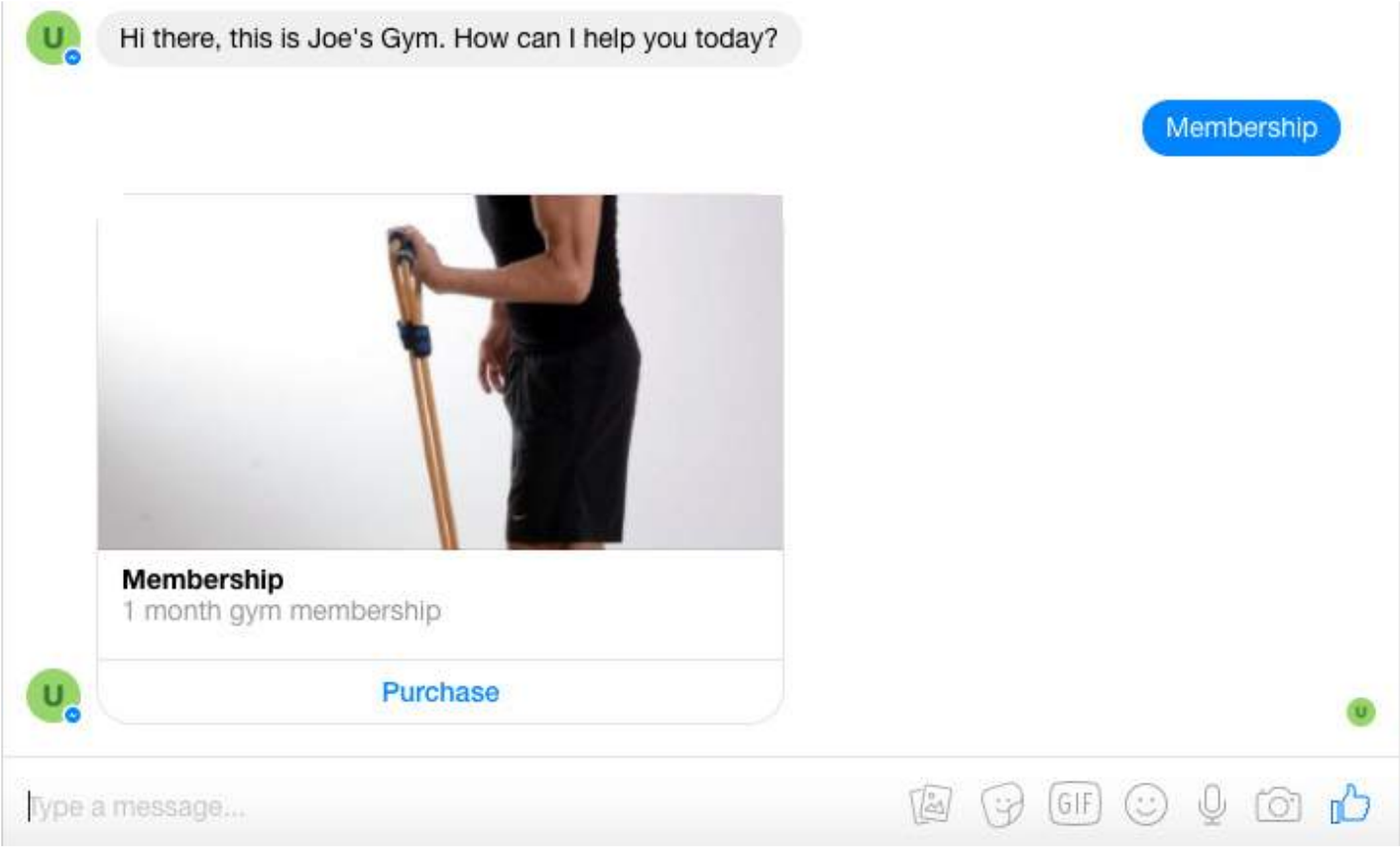
With this info input, click 'Add Button', select Payment, and name the button ('Purchase' in this case). Enter the price, as well as the interactions that will be generated if the payment succeeds or fails (note: you'll need to create these as individual interactions) and the size you'd like the window to display at. Click 'Add Button' to complete the card.



Finally, we'll need to set up the interactions that lead to the Payment card. In this example, we'll direct users from the first greeting message. A quick reply of 'Membership' is input, and set up to direct users to the Payment card.

That's it! Give it a quick test in Facebook Messenger and it should appear like below.

Part 2 Building Your Chatbot



Using the steps above, SnatchBot lets you monetize your chatbot and start utilizing conversational commerce in minutes. This is a crucial function for those readers who want their chatbot to be a conduit for income generation.

Conclusion

Hopefully, you are now up to speed with everything you need to know about chatbots. Most importantly of all, you should be able to make one for yourself, even if you have no background in computing. Only a few years ago you'd have had to either known something about coding or spent a great deal of money to create a chatbot for your business, say. But as is often the way with our species, we've figured out ways of making tasks easier and more intuitive.

Chatbots have been heralded for some time as the coming innovation that will change our cultural world. They haven't done so yet and in fact, a certain amount of disillusionment has set in. I wrote an article for a tech blog in 2017, for example, that was rejected, because, 'I couldn't get past the idea that chatbots are going to spread rapidly.' This is understandable but mistaken. There's often a pattern to the adoption of new technology that often follows the same path: massive excitement, new buzzwords, new hope, then a decline of interest and outright public cynicism when technical challenges are seen to continue to be a major barrier, but then comes a revival of enthusiasm after the problems are solved and a widespread, game-changing adoption of the new technology.

My belief is that at the time of writing (late 2017), chatbots have reached the revival point of this pattern. Dozens of companies have answered the challenge of making chatbot creation simple, intuitive and yet extremely capable of dealing with the tasks allotted to them.

The resulting explosion in chatbot creation – hundreds of thousands this year, millions next – is going to change the world. In all sorts of arenas, we are going to encounter chatbots, and chatting with them will soon be second nature to us.

On a longer timeframe, I believe the chatbot road is the more likely one to lead to AI than the robot building one. In a way, by making chatbot creation so easy (and for free in most cases) we are crowdsourcing the question of how you get software to understand meanings from human language. And applying millions of minds to this task is the right way to create breakthroughs.