

Conversational Commerce

Outline

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By: Raghu Murali

raghu.murali@thorro.com

Our take on Chatbots

Messaging apps such as Whatsapp and Facebook Messenger have surpassed online social networks in terms of number of active users and time spent per user on the platform. Messaging businesses should be as seamless as messaging friends, and thus the effort is on to enable a frictionless b2c messaging system. The challenge is how to keep this messaging one-to-one while also keeping the cost low for businesses.

Chatbots enable one-to-one conversation with customers, 24/7 service and ability to leverage data for a personalized experience. However, AI is still in its infancy when it comes to chatbots. A well designed chatbot can overcome this limitation by providing relevant menu options as part of the chatbot response.

Though the customer may realize that they're not chatting with a human, the time savings for the user more than compensates this perception. We need to ensure that chatbots are not easily hackable when designing the flow.

The explosion in data availability combined with a technology like chatbots enables brands to tailor their communication based on individual customer needs and preferences.

How to Implement

There are many vendors providing powerful chatbots that can be easily rolled out across multiple platforms. We highly recommend going the off-the-shelf route rather than building one from scratch. In addition, platforms like Alexa and Google Home offer opportunities to increase brand visibility, and need to be carefully evaluated.

User Experience

Chatbots also offer a way to streamline the online shopping experience:

- Current methods of website navigation are mostly top-down (women→dress→pink→size 6)
- Chatbots can let users type in what they need ("pink dress in size 6). This allows the user to get to their items quicker and in addition reduces the tyranny of choice.

Machine Learning

What is Machine Learning?

Machine Learning (ML) is a computer system that automatically improves through experience. ML has been a topic of interest since the dawn of computers. A confluence of factors has led to a surge in applying ML to a variety of business and technical areas – availability of granular user data (e.g. from mobile devices), high-power computer processors, cheap memory, and scalable IT architectures.

Broad categories of problems tackled by ML include:

- Association – finding correlations between variables (e.g. customer who buys milk also buys bread)
- Classification – assign the input to a particular bucket – e.g. loan applicant assigned a risk level
- Pattern recognition – used in recognition of character (written / printed text), image (self driving cars, CT scans), and voice (Siri).

A combination of these techniques may need to be used in many applications; e.g. a recommender system could use both association and classification.

Traditional ML is based on solid statistics. A recent push in ML is to use machine learning to weed out correlations before determining causation. This is done by going through large quantities of data and scanning multiple variables. This approach is very different from Econometrics, where cause and effect relationships are established rigorously followed by trying to prove these using real data. Both approaches have their merits.

Machine Learning can also use a non-statistical approach – called “deep learning” or Artificial Intelligence (AI). AI had set high expectations back in the 80s with neural networks. But by the 90s, reality set in when application developers realized that computational power available was insufficient to mimic the brain.

In addition, our understanding of how the brain works is very poor; thus, taking a model neuron and implementing it on a computer creates a logical “black box”; for e.g. a neural net may work well for the cases it is tested against – but we don’t know why it is working, and this creates uncertainty when it is applied to critical applications like self driving cars.

A “deep learning” model uses a neural network many nodes deep. Deeper networks show a superior learning however are more computationally intensive to train and more challenging to understand.

We are still far from mimicking the human brain with deep learning networks. We expect to see rapid progress in this area, especially with novel computational architectures where the cloud is used as the brain and edge devices mostly used for communication.

Conversational Commerce – Going Beyond the Basics

Chatbots can fulfill many of the basic questions asked by users – e.g. store hours, locations, deals. Bots can even suggest looks based on just a few questions.

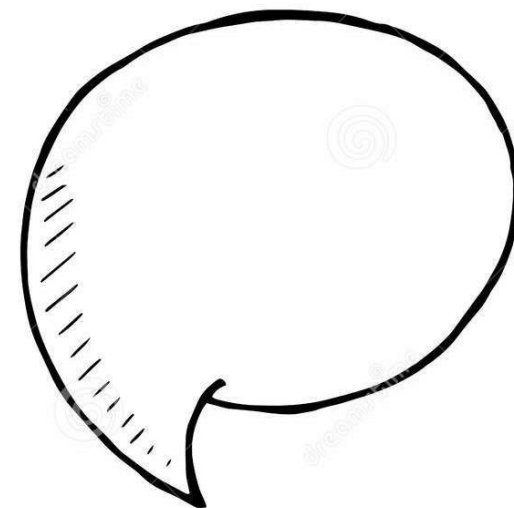
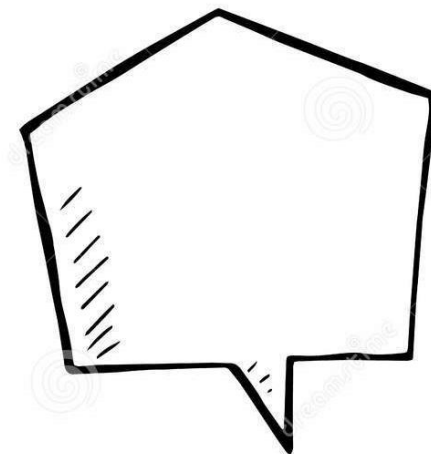
Debottlenecking the user experience online involves enabling a live agent or a bot to answer questions like:

- What size should I buy
- Do you carry a specific color
- Which look should I get - personalized recommendations
- Can I get your opinion on specific items

Existing chatbots unfortunately do not provide any of these above services in a reliable way. Beyond even the most basic of questions, the bots hit a wall and usually require handoff to a live agent. If this handoff is not done seamlessly, it is sure to frustrate users, and might lead to abandoned shopping carts and unwillingness to try the bot in the future.

Progress is being made by various vendors to improve the chatbot algorithms and we are optimistic that more autonomous will hit the market in the coming years.

In spite of the limitations of existing bots, click-through rates (75+% for Aerie on FB Messenger) indicate that customers on social media prefer this medium and probably understand the limits of these bots.



Chatbot Vendors

Features

We list the primary features to look out for in a chatbot offering:

- Quality of answers for both voice and text
- Omni-channel
- Cloud based and scalable
- Easy to pilot and rollout
- Compatible with multiple platforms (iOS, Android, Whatsapp, Facebook, Kik)
- Ability to take text, voice and image as inputs

Absent in the above list is the type of algorithm used by the vendor – whether statistical machine learning or a deep network. We believe that this will show itself in the quality of answers provided.

Vendors

WIT.AI
(Facebook)

API.AI
(Google)

Nuance

PandoraBots

Lex
(Amazon)

Manychat

Microsoft

IPSoft

ChatterBot

Chatbot Case Studies – 1

Facebook M

Launched with much hype in late 2015, FB shut this program last month

- Offered for free to 10K users in the SF area, as a **virtual assistant**
- Was able to achieve only 30% automation – many requests were routed to humans for a final decision making
- One reason for limited automation is the variety of tasks it had to handle

If FB had limited the number of things M had to do – e.g. only booking restaurant reservations – it could have achieved a higher level of automation

Amazon Alexa / Google Home

Amazon has already sold 10+M Echo devices.

- Not yet being monetized in a big way (except for upfront hardware)
- Advertising is a possible way to monetize
- Alexa is slowly becoming a platform for users to build apps on

By 2022, it is estimated that ~55M households will have a smart speaker

Bot Platforms

Platforms allow bots to operate without the need for a whole new app and authentication. In the US, leading platforms are Facebook Messenger (>100K bots), Kik and Twitter

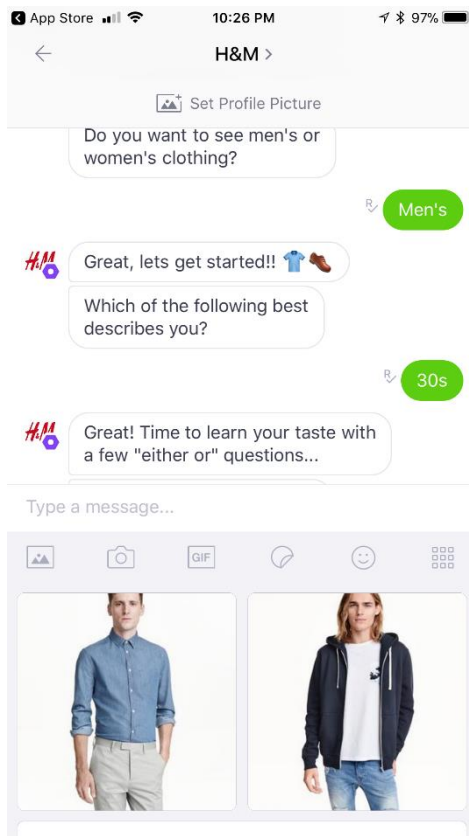
- Basic bots can be built on an if-then-else logic; we can create simple twitter bots in under an hour
- Interface is a hybrid between browsing a website and chatting with a friend (e.g. menu buttons show up in some responses)
- Only a few retailers have signed up in the US

Chatbots took off in China way before in the US. WeChat is a shining example of how chatbots are being used. The level of automation is not high in many of these bots.

Chatbot Case Studies – 2

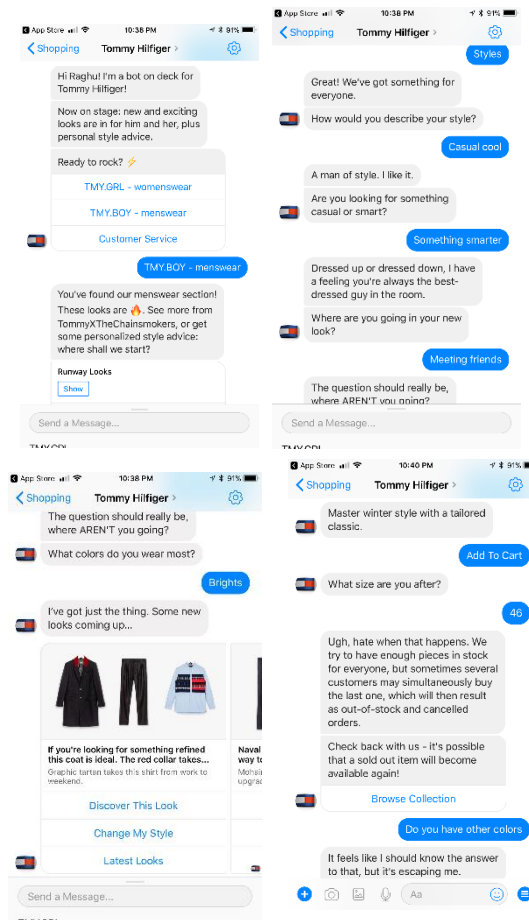
H&M

Starts off with a good set of questions and takes the user to sample looks and eventually product details



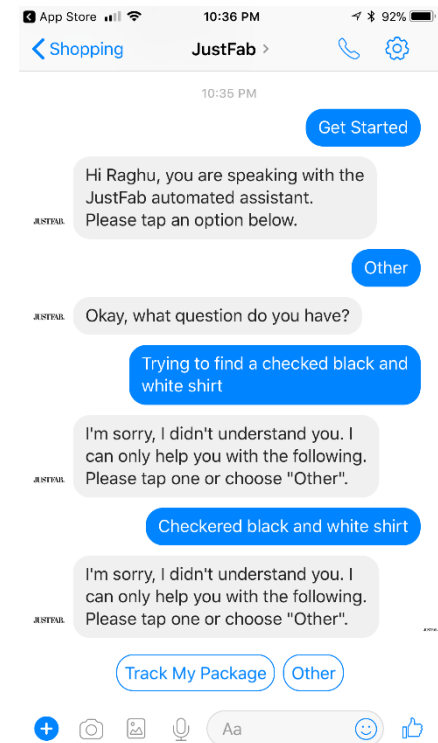
Tommy Hilfiger

Good set of options and questions until we get to availability and color



JustFab

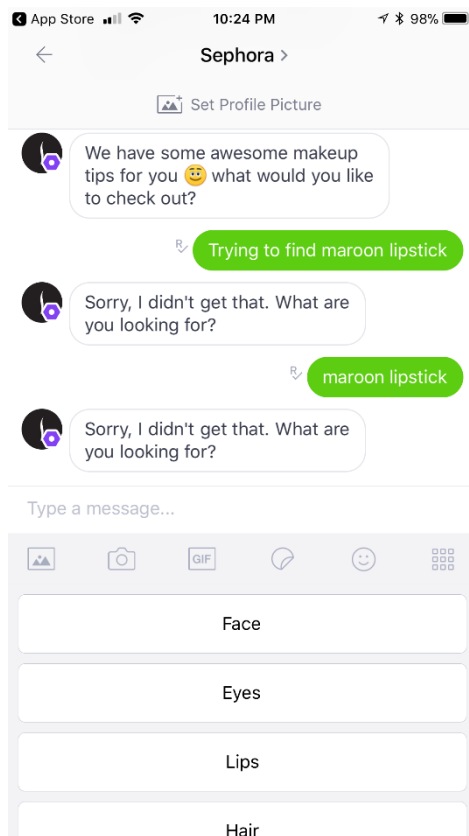
The bot asks open-ended questions but is unable to comprehend user requests



Chatbot Case Studies – 3

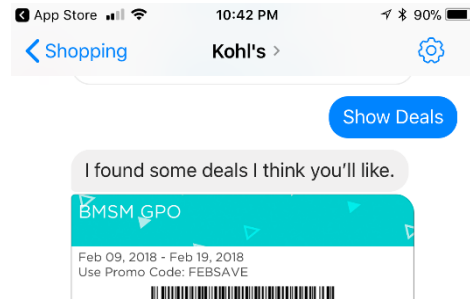
Sephora

Bot starts off in a very open-ended way, and quickly hits a wall



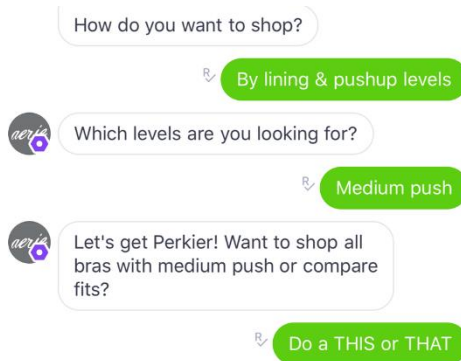
Kohls

Bot offers “show deals” as an option and when selected, shows a set of attractive deals



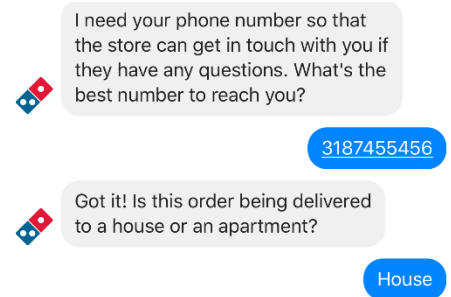
Aerie

Bot offers simple options to navigate to relevant page



Domino's

Bot has been programmed to take pizza orders



Poncho

Weather bot quickly gets confused

