kommunicate

The Complete Beginner's Guide to Chatbots

Introduction

Rollback a couple of years, and the first thing that must have come to your mind, when you read mobile-first was perhaps apps. And no doubt, apps have given extensive leverage to businesses looking to explore newer markets and attract different classes of customers. But come 2017, we've all been seeing signs of app usage and growth plateauing.

So does this indicate the imminent death of mobile apps and a doomsday scenario for mobile-app businesses?

Well not necessarily, the key here for businesses is to evolve as technology does.

One such technology that is being touted as the one to replace mobile apps and websites is that of AI-powered Chatbots.

Now bots are at a nascent stage and most people don't even know what these bots are. Whether they can truly fulfil their potential is there to be seen, but one thing that is certain is that they can't be ignored anymore.

So if you are wondering what these bots are, why so much fuss around them, what can they actually do and how to build one - I will urge you to read more. And by the time you finish reading this article, you might just be as crazy as I am about these super powerhouses.

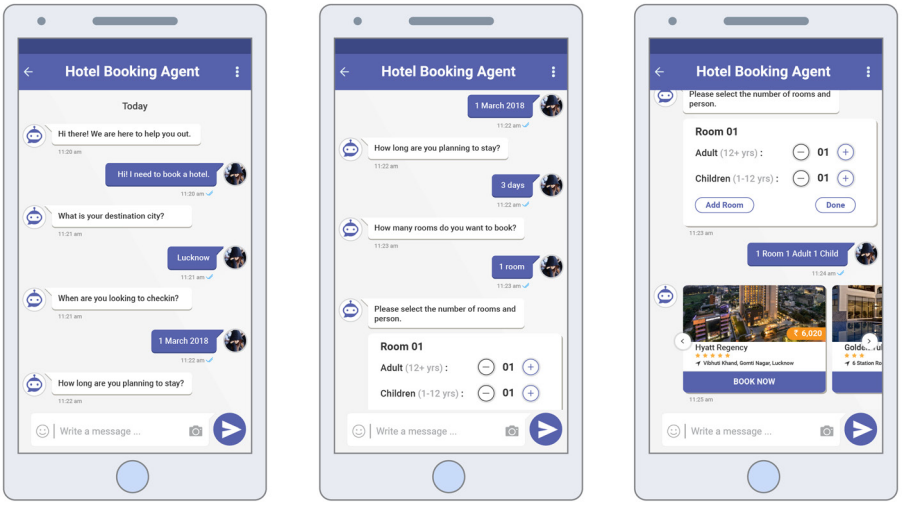
What is a Chatbot?

Chatbots are your mechanised pals, powered by a set of rules and some artificial intelligence, that you can interact with via a chat interface. Essentially they can be looked at, as automated systems that reside inside your messenger apps (Facebook, Slack, In-app Messenger of your apps etc.). They are designed to imitate human conversations and carry out pre-defined actions, based on voice commands and/or text inputs.

Let me help you visualise with an example:

If you wanted to book hotels for your next travel pursuit, typically you would:

- First visit one of the travel search marketplaces like Makemytrip
- Feed in the location and duration of stay
- Set other filters like type of hotel & no. of rooms required
- Then shortlist the best available option
- And finally make the booking



Now if one of these travel planning marketplaces decides to make a bot, you can then make and manage your bookings by simply telling the bot your requirements. It would ask you all the relevant questions and you just need to answer and that's it. The bot will fetch the best results based on your preferences and assist you in making your itinerary.

Instead of browsing a website, this interaction mirrors a typical retail point of sale moment where you receive personalised service based on your unique requirements.

With chatbots you have endless possibilities and preparing your travel itinerary is just one of them. I guess you must be wondering about what else can a chatbot do and how businesses can leverage them to improve user-experience.

Well I suggest you to scroll down and read on as the next section is dedicated to the various purposes that chatbots can serve.

What can they do?

Soon there will be a chatbot for everything, from pizzas to flowers and for every other noun. Does that sound like a far cry to you?

Well Gartner recently reported that by 2020, 85% of customer interactions will be managed without human.

> **By 2020, customers will manage 85% of their relationship with the enterprise without interacting with a human.**
>
> Gartner Predicts

Now whether there can truly be a bot for everything or not is there to be seen, but one certain thing is bots have entered our lives and are leaving no time soon.

Some of the most popular use cases that bots are serving and assisting their human counterparts in are described below:

- **Bots as sidekicks to customer support agents:**

There had been many apprehensions against the popular belief that bots can one day replace customer support agents. Can they or can they not, I believe they can't because they lack the empathy and sensitiveness of a human agent. But what they can definitely be are assistants to these support agents and do the simple tasks like answering FAQs, suggesting help articles and routing queries.

• Chatbots in Banking:

Accenture in a recent report said that 76% of all banks surveyed, believe that in the next three years majority of them will deploy AI interfaces as the primary mode of interaction with customers. Testimony to this belief is the fact that leading banks have already started rolling out their bots. For example:

- HSBC has made customer support a 24X7 affair with their virtual assistant 'Amy'
- The updated version of American Express' Amex Bot will allow customers to query any information regarding their card and account
- Masterpass enabled bots by Mastercard creates a seamless shopping experience within FB Messenger. It allows customers to transact with leading brands like Subway, Freshdirect and The Cheesecake Factory, all without leaving Messenger.

• Commerce Bot:

As commerce moved from retail to online, it opened up a lot of opportunities for e-tailers. Chris Messina touted the year 2016 to be the year of conversational commerce, and e-commerce companies have jumped onto the bandwagon. Chatbots have allowed them to cater to the customer's need for instant gratification in a number of ways:

- Shopping Bots like mySimon, queries across various merchants and reports back with product prices and descriptions.
- Concierge Bots like Operator, enables users to browse curated products and make a purchases.
- Bots like CelebStyle, allow users to find products based on the celebrities they admire.
- H&M's bot learn from each customer's preference by combining data, and then makes personalized recommendations in a multiple choice fashion.

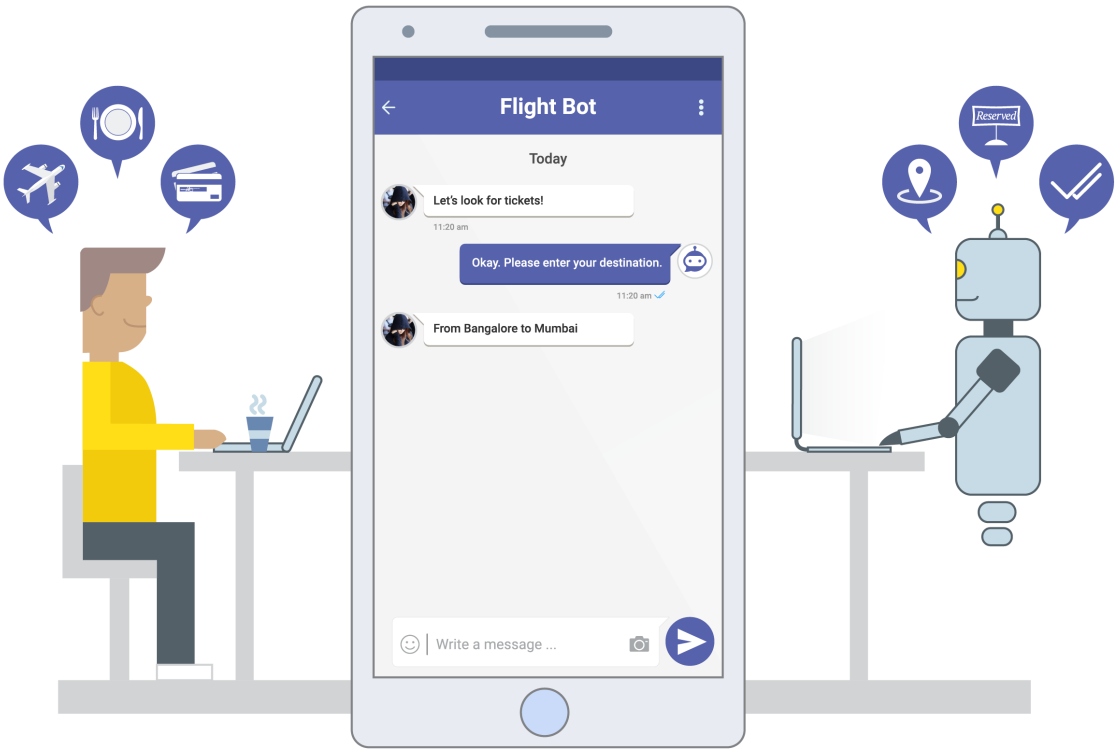
• Travel Concierge:

In the opening example of the article, I have demonstrated how chatbots can help you prepare your itinerary when you are planning your next trip. Major players in the Travel and Tourism marketplace have adopted the disruption and rolled out bots for different use cases:

- Pana is a virtual travel agent, where users get access to human travel agents and a sophisticated chatbot.

- Copa Airlines' Web-based chat bot Ana, answers simple questions like what destinations Copa Airline flies to and what Copa's baggage allowances are.

- HelloGbye is the closest that comes to what bots can one day be. You can just tell the bot your travel requests (like how you do with Siri) and it will handpick and tailor make the the resulting options for you.



- **Chatbots for Learning:**

Leslie is a chatbot, that can help you learn English. She can define words, provide synonyms and antonyms, translate words, explain grammar and do many other things.

- **Chatbots for Sales & Marketing:**

Your sales team is made up of humans and that's a good thing, but sadly humans can't work 24X7. That means a missed opportunity on capturing a lead. Chatbots like Driftbot, can plug the gap by engaging users with welcome messages, answering simple questions, qualifying them and finally passing them to a qualified human agent.

- **Chatbots as your friend:**

Chatbots like Xiaoice and Mitsuku are more like personal companions that you can simply talk to.

As you can see the possibilities are endless with chatbots. It is possible to build anything imaginable.

But is it worth investing the time and effort that it takes to build one. Sure it looks cool and super advanced, but will it be a forerunner or fade away like any other fad?

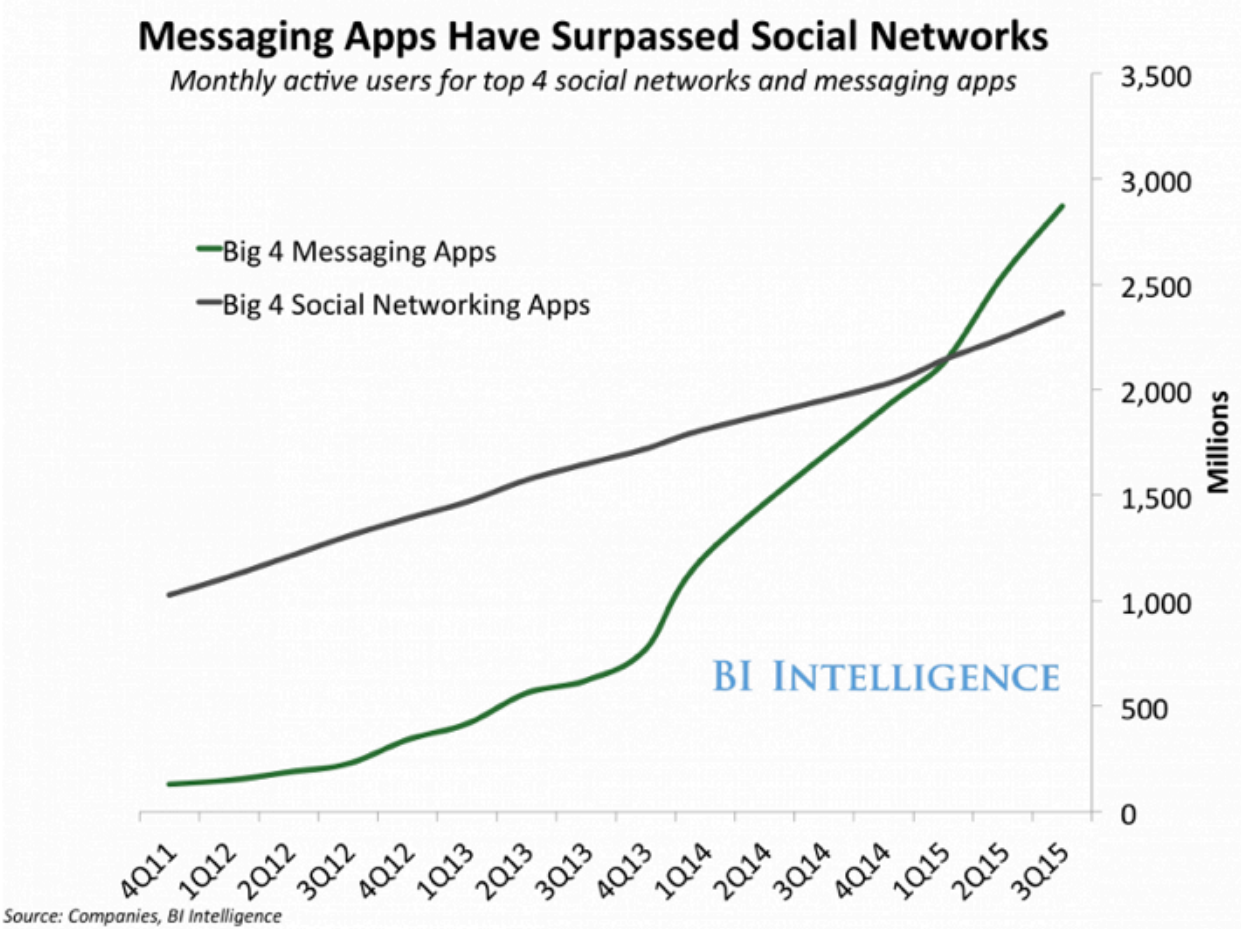
Why Chatbots Can Be, What They are Touted They Can Be?

Chatbots have existed for years before going mainstream. One of the many reasons for taking them seriously is they stood the test of time.

However several recent global trends have given relevance to chatbots and made way for a once-in-a-decade paradigm shift.

1. Messenger Apps overshadowing Social Apps:

Messaging is the native UX of mobile and no wonder the Top 4 Messaging apps have come out as the preferred means of communication on mobile devices.



Now you would like to build your business where your users are, and it is clear that they are inside messenger apps. Typically a user would also expect to be able to access all of a business' services inside messenger apps.

Now Chatbots which reside inside these apps and have the capability to imitate natural human interactions, will be the outlet for users to interact with your business.

2. App Fatigue:

Let me explain this with an example; only 16% of Starbucks customers use their mobile app, despite all of Starbucks' promotion tactics. Now it goes without saying that companies with lower brand equity and resources will be receiving even poorer results.

The reason; users don't like to find their way across tiny pixelated mobile screens to get their job done. They would anyday prefer a simpler flow that can be navigated with voice or text commands, and precisely that's what Chatbots are there for.

3. Reduction in Development/Maintenance Cost:

Chatbots are server-side applications with minimalistic UI, therefore the costs and efforts in development and maintenance are considerably less.

Major tech giants have also developed sophisticated bot frameworks to support this paradigm shift. This not only has reduced costs, but also made available cutting-edge technologies like AI, NLP and Speech Recognition for Bot Development.

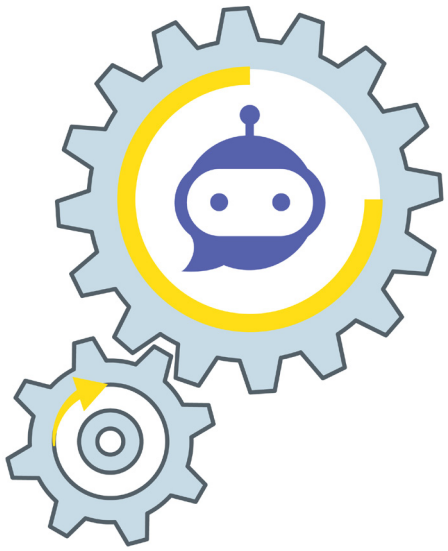
Companies like IBM & Microsoft have invested heavily on developing advanced bot frameworks. Also major messenger platforms like Facebook, Skype, Slack and their likes have approved the release of bots. The very fact that major tech giants have embraced bots, strengthens the belief that chatbots are the future of business-to-customer communication.

"Well that is all great! But how do I build one? It's a completely new technology with limited documentation, wouldn't it get tricky when I sit down to build Artificial Intelligence into my bot?"

Trust me; it's not all that daunting a task, and in the next section I have got you covered for all the difficulties you might face.

How to build chatbots?

Before we move into how to build chatbots, it's important to understand the different types of chatbots that are there.



The first kind are..

Chatbots that function based on rules:

They can only be as smart as they are programmed to be. These bots work on a specific set of rules, and anything that comes beyond its purview it fails to act upon.

The second kind of bots, which have a brain of their own are..

Chatbots that runs on Machine Learning:

They are backed by Artificial Intelligence and grows smarter with time. These bots have the capability of processing natural human language and act accordingly.

Now, let's get back to building a bot.

Before you set out to build a bot, it is important to note that the tricky thing about building a bot is more of an user experience issue, and not writing codes.

Typically to build a chatbot, one needs to:

1. Identify the problem it is going to solve, and design a conversational user flow to solve it
2. Choosing the platform where the bot will reside (Facebook Messenger, Slack, In-app Messenger etc.)
3. Server setup to run the bot from

Now in order to configure the bot to drive a consistent conversational flow and assist the user, one should find the answers to these 3 questions:

1. What's the user's goal?

2. What's the bot's goal?

3. How to handle unexpected input?

Finding answers to these questions and incorporating the learnings into designing the conversational flow will give your bot a human outlook and safeguard it against unforeseen situations.

Once the overall conversational flow is designed, the next step is to choose a platform for the bot to reside. Typically it would be one of the major messenger platforms, or the in-app messenger of your application.

In order to integrate your chatbot within social messengers, most companies have detailed documentation guides which are listed below:

- Facebook
- Slack
- Telegram
- Kik
- Discord

The penultimate step is choosing a solution to build the bot. Mainly these are of two types:

1. **Development (non-coding) platforms**, for people like me who can't really code

2. **Code-Based Frameworks**, which gives you a lot more flexibility, deeper level analytics and the advantage of AI incorporation.

Below is a list of some of the most popular solutions of either categories, accompanied by their salient features.

Development (non-coding) platforms

- **Chatfuel:** The platform is for building Facebook Messenger bots, and allows you to build and launch one within 7 minutes. The platform supports content cards with the option for easy checkouts. You can also set up an FAQ or broadcast notifications to followers.

- **Botsify:** Botsify has a drag and drop interface that helps you design templates easily. It supports analytics integration to give you insights about what people are talking about. It also has a machine learning interface so that you can continue training the bot.

- **Motion AI:** Hubspot recently acquired Motion AI with the aim to enable businesses better engage, convert, close and delight their customers across every channel at scale.

- **Flow XO:** They support integrations with over 100 modules and services to allow you to be where your customers are.

- **Microsoft QnA maker:** As the name suggests, QnA maker allows you to convert your FAQs to a bot in minutes. This can be done simply by feeding in the URL of you FAQ page, and the next time your users look for any help the bot will be there to help them with the right answers.

Other such platforms are **Recast AI, Bottr, Chattypeople, Botkit** etc.
For more details into non-coding platforms read this blog on **14 most powerful platforms to build a chatbot.**

Code Based Frameworks:

Building a bot using frameworks, requires working knowledge of programming languages. However the bots built hence, has a brain of their own. They have the ability to store data and learn from it, so much so that with time they can imitate human interactions by processing natural human language.

Now, when you set out to build a bot using one of these frameworks (Details below), you will have access to a set of predefined functions and classes that would help in faster development.

Below is a list of Bot Development frameworks and their salient features:

1. **Microsoft Bot Framework:** They provide all the ingredients to build, connect, deploy and manage intelligent bots. Bots built on Microsoft Bot Framework can be deployed on any website, app and also on messengers like Slack, Facebook Messenger etc.

   Running on Microsoft's flagship Azure, it provides an integrated environment that's purpose-built for bot development with Bot Framework connectors and BotBuilder SDKs. It also supports cognitive intelligence that enables the bot to see, hear and interpret in more human ways.

2. **Facebook Bot Engine (Wit.ai):** Wit.ai provides APIs that can process Natural Human Language, which can be in the form of both text and voice input. Upon processing this input, the Bot engine gauges the user's intent and executes the intended action.

   Wit's dashboard allows you to manage the entire conversation flow by means of what they call it, a Story. Every Story on Wit starts with understanding human intent, based on which the Bot sends a subsequent message to the user and moves them to a suitable point in the story. The penultimate step in the story is the execution of a suitable Action, which can be anything from ordering a pizza to booking an Uber.

3. **Dialogflow (Api.ai):** Api.ai allows you to create engaging voice and text-based conversational interfaces via which your users can interact with your product. The platform is a favorite among mobile app developers and developers in the IoT space.

   In order to make it's conversational UI a lot more context-aware, Api.ai has pre-defined domains including those of various IoT categories. This means the platform knows ahead of time what domain any defined entities or intent applies to. This allows the system to tap into its existing library related to any particular domain.

   Developers can also describe their own interactions and scenarios and the platform will seed the same into its library to give you a more developed and robust conversational UI.

Well saying all that was easy, but I won't just leave you there. In the next section I have a detailed step-by-step guide on how you can build your first bot. For the sake of this guide I have created a project on DialogFlow, and will be drawing inferences from it in the course of this article:

Tools and Technology Used:

- **Dialogflow:** Bot framework to create intelligent chatbots, which you can then integrate with your apps.
- **Node.js :** To define the fulfilment logic, which eventually processes the data.
- **Kommunicate chat as a service:** Chat Interface to query the bot and display the resulting output.

Project Description - RepoFinder

RepoFinder helps you find open-source development libraries from Github, based on your input.

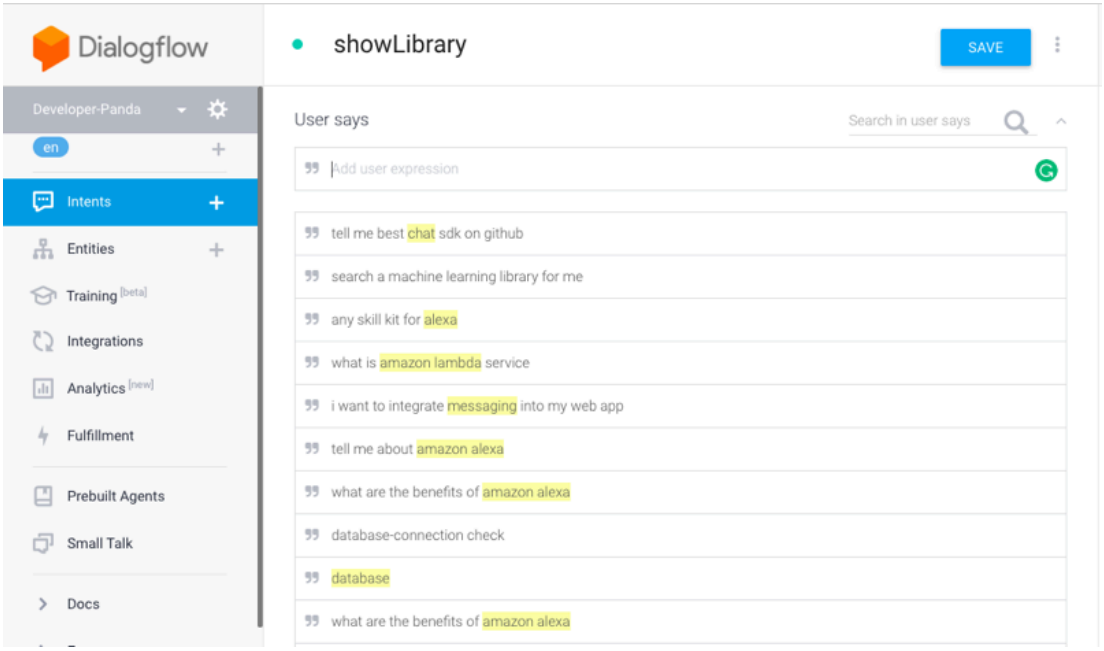
Step 1 - Creating Agent:

The first step is creating an agent, which essentially is the bot you are building. You can create one through the console by following these instructions. In our case, we've named it RepoFinder.

Step 2 - Creating Intents:

Next you will have to create Intents. Intents basically help the bot perceive the user's input and decide the subsequent action. Intents can be created both from the console or by calling APIs.

DialogFlow by default gives two intents: Default Fallback Intent, Default Welcome Intent.
More Information on creating Intents is here.



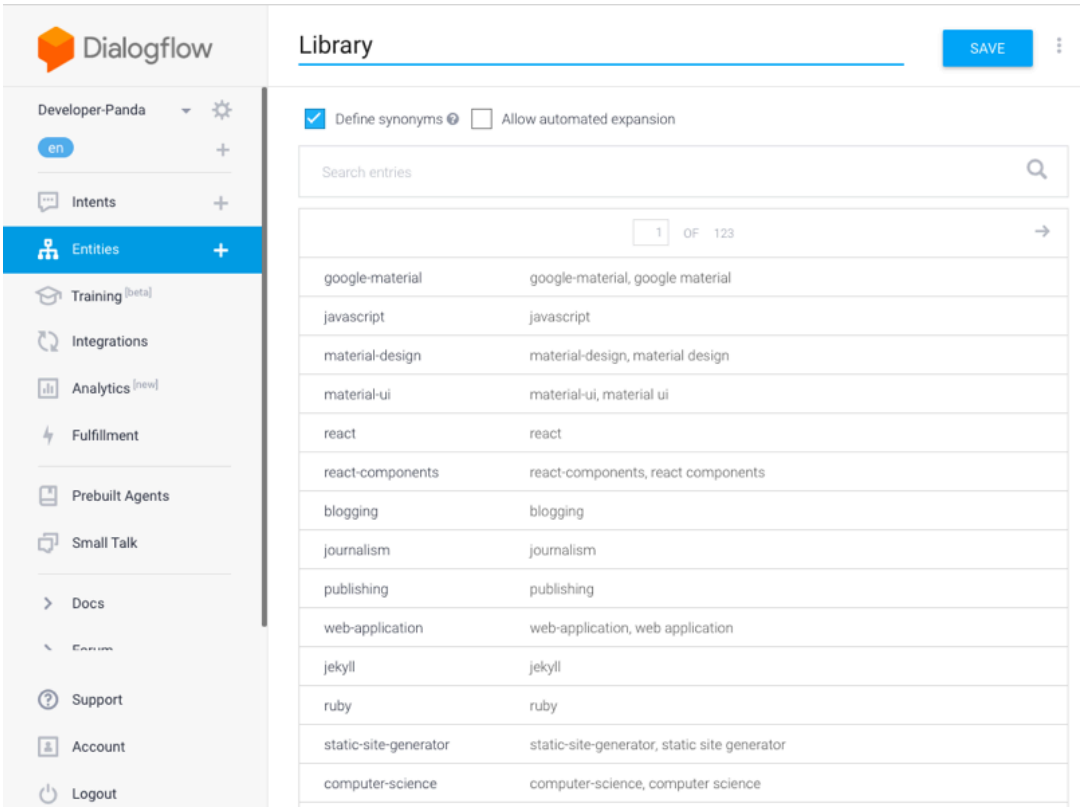
Step 3 - Creating Entities:

Once Intents are created, you need to define entities. Entities are powerful tools used to extract parameter values from the user's query. Any actionable data that you want to get from a user's request, should have a corresponding entity.

Consider our agent RepoFinder. The user says “Tell me the best Chat SDK on GitHub” - this should tell the agent that the user needs some info on Chat SDK.

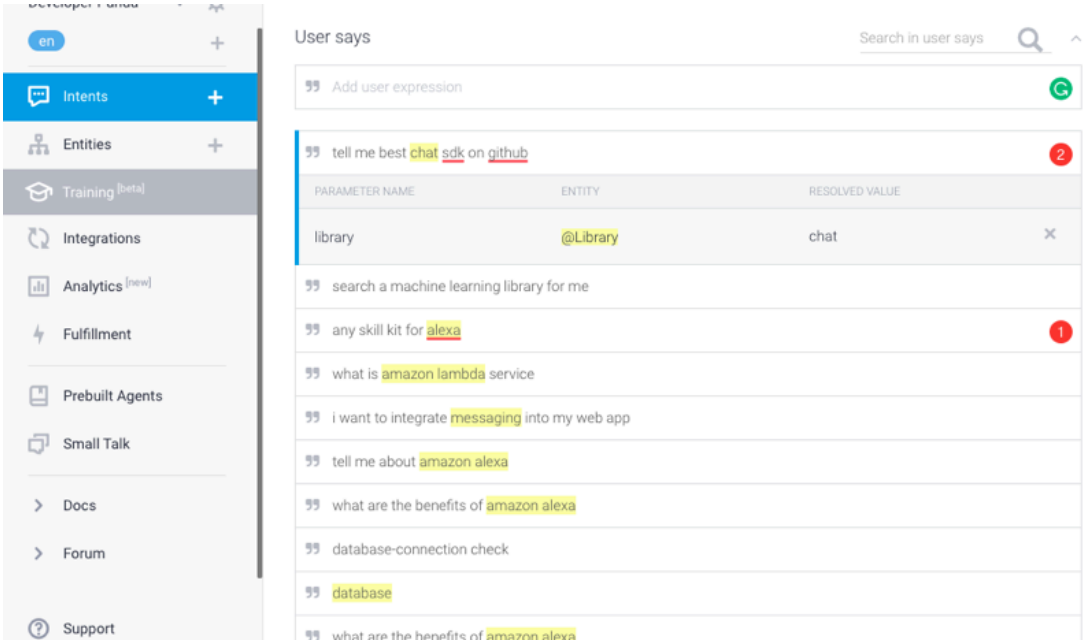
So how do you configure the agent to do it? Well, for each user expression mapped to an intent, the agent needs to figure out the respective input that the user wants info about. This, the agent does with the help of Entities.

So for each intent that you create, every user expression should contain a corresponding entity, which your bot agent needs to figure out. Now by default, the agent can't do that - you need to train it to do so.



Step 4 - Training Agent:

DialogFlow provides a training tool that allows you to add annotated examples to relevant intents in bulk (see screenshot below). It helps to improve the classification accuracy of agent.
Here you will also receive a log of all the queries sent to your agent and what the agent responded in return. This is very useful if you tell your agent something and it responds with an output you don't like. It can also be helpful if you realize later on that you forgot a synonym of an entity and users are using that a lot, then you can go and tell your agent what to do in that case.



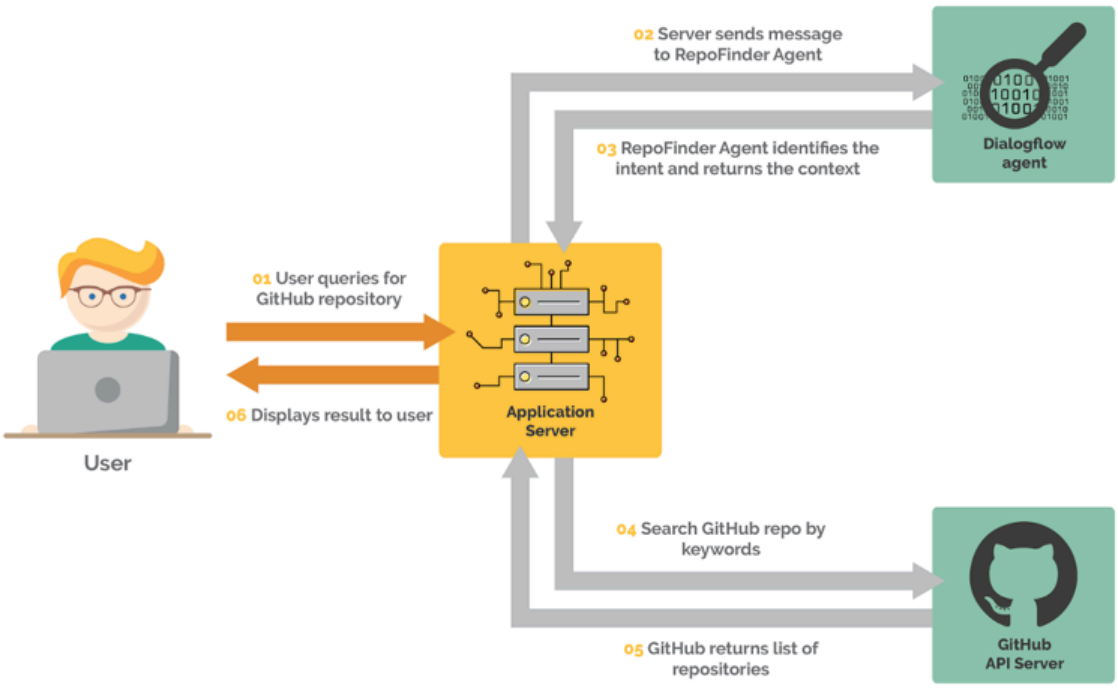
Step 5 - Actions:

Now your bot is all set to function. Every time it receives a query, it will first capture the intent and then extract the entity. The next step is to generate a response, which the user is ideally seeking. This you can do by leveraging webhooks to fetch data from external sources (GitHub API server in our case). This you can do in the Fulfillment Section, by specifying the webhook URL.

The penultimate step is to tell the intent to use this webhook to respond with the data that was returned from it.

Integrating the project (e.g. RepoFinder) in Application/ Website:

The image below demonstrates the integration architecture and the sequence of information flow:



1. User comes to website and asks for required library.
2. Website uses Kommunicate Chat APIs to send message to application server.
3. Application server sends the query to Dialogflow agent.
4. Agent uses machine learning algorithms to match the user's requests to specific intents and uses entities to extract relevant data from them thereby processes natural language to convert it to actionable data.
5. RepoFinder returns the actionable result to application server

A part of Response of RepoFinder look like this:

```
{
        “parameters”: {
                “keyword.original”: “chat”,
                “keyword”: [“chat”]
        }
}
```

6. Application server call github search APIs and get the list of libraries related to the keyword.

7. Application server then sends list of libraries back to User again by calling Kommunicate APIs.

As you can see building a Chatbot, is not really as intimidating as it may seem. Owing to all the major developments and the extensive support bots have seen from major tech giants, building a bot will only get simpler with time. This coupled with mobile user's affinity towards conversational systems will soon make bots mainstream.

So, if you have not yet deployed a bot for your business, it's time you start thinking of deploying one.

Don't want to build one yourself?

Talk to Us and we might just have a custom bot in store for you!

Bringing power of real time and intelligent communication for everyone with ease

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