

Building Practical Chatbots

Session 1 **Introduction**

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Plan for today... (1/2)

- Session 1: Introduction
 - We'll get a hang of what the hype is all about
 - Setup our laptops for the later sessions
 - We'll discuss a sample use case, for which we'll build solutions later
- Session 2: Google Dialogflow
 - We'll discuss the salient features of Google's Dialogflow Platform
 - We'll build a working chatbot over Dialogflow for our discussed use case

Plan for today... (2/2)

- Session 3: IBM Watson Assistant
 - We'll get to know Watson Assistant better
 - We'll build a working chatbot with the help of Watson Assistant for the same use case, and will see how the process differs in comparison to Dialogflow
- Session 2: Amazon Lex
 - Finally, we'll also look at how Amazon Lex differs from Dialogflow and Watson Assistant
 - To complete the trilogy, we'll also build another chatbot for our use case, using Lex as well

What are "chatbots"?

- There's no "universally accepted" definition

- A working definition is

A software component that can interact with users using Natural Languages (like English or Hindi)

- Examples:

- When you say "Ok Google", you are essentially interacting with a *Virtual Assistant* chatbot
- Go to SBI's website, you can interact with their *Helper* chatbot, Sia

Chatbots are nothing new !!

- *ELIZA* was probably the first working prototype of a Chatbot, built in 1966 !!
- Eliza was built using simple pattern matching, and pre-defined templates to categorise and answer user queries
- It's positive reception started a race to build solutions that could pass *The Turing Test* !
- You can still try talking to it if you wish at <https://www.masswerk.at/elizabot/>

Did they work?

- Even though Eliza was succeeded by multiple sophisticated solutions, they never really came close to getting adopted in industry
- They failed because
 - It is hard to come up with patterns and regular expressions that can cover all possible scenarios
 - Humans use sentences with sarcasm and hidden meanings
 - Converting *speech* to *text* and vice-versa is difficult

Then why are we discussing them?

- Recent advances in Natural Language Understanding (NLU) has made it easier to tackle some of these problems
- The success of Deep Learning techniques have played a major role in these improvements
- The temptation to engage users by "talking to them" is too much to give up !!
- So chatbots are popping up everywhere !!

Gaana launches india's first music streaming chatbot

Now share music while chatting on Facebook Messenger



ABP News Network joins hands with Amplify.ai's AI-driven virtual assistants

24 April 2019

GST BOT: Understanding GST made easy

B.S.E. RED

GSE Red Follow

Oct 3, 2017 · 2 min read

Yatra launches Facebook Messenger bot

IRCTC Launches 'AskDisha' For Customer Support And Engagement

AskDisha will support several regional languages in the IRCTC android app.



SBI launches chatbot to help customers in banking services

1 min read · Updated: 25 Sep 2017, 04:38 PM IST

PTI

The chat bot, known as SBI Intelligent Assistant, or SIA, will help customers with everyday banking tasks just like a bank representative

Swiggy's Chatbot, Powered By Layer's Conversation Platform, Sees High Customer Adoption

STATISTICA

This is only the tip of the iceberg !

Let us warm ourselves up for this marathon !!

CHATBOT BASICS

Intents – aka "What"? (1/3)

- *What* will the chatbot you are building do?
 - It may *answer* user's queries, e.g. What time does the school start?
 - Or, it may *do* something for on behalf of a user, e.g. booking a flight, with provided details.
- These are called the "intents" that a chatbot can cater to
- Intents can be of two types – *Information Retrieval* or *Real-world Actions*

Intents – aka "What"? (2/3)

- *Information Retrieval* intents try to figure out what the user is asking, and provide them with a suitable response
- Example:
User: How's the weather right now?
Bot: It's raining !!

Intents – aka "What"? (3/3)

- *Real-world Actions* take inputs from a user, and perform some action in the real world based on that
- Example:
User: *Set an alarm* for tomorrow 5 AM.
Bot: Done. I've also added a reminder to your Google Calendar !!

Entities – aka "Who"? (1/2)

- What to do is just one part of the puzzle
- The bot should also know about people, things, places etc. which will pop-up in conversations with the user
- Knowing *who* will be these "entities", is a part of building the bot
- Entities could range from names or addresses to quantities and food choices

Entities – aka "Who"? (2/2)

- Examples

User: How's the weather at Delhi right now?

Bot: At Delhi, the sun is shining bright

User: Set an alarm for tomorrow 5 AM.

Bot: Done. Alarm set for 5 AM, tomorrow.

Fulfilments – aka "How"? (1/3)

- After figuring out what is to be done, and having information about everything that is required, bot needs to respond to the user
- *How* should the response be prepared, is the next question to ponder !
- Is the response "static" or "dynamic"? Does it involve invoking some "external logic", or can the bot prepare the response on its own?

Fulfilments – aka "How"? (2/3)

- "Fulfilments" are the ways in which a response is prepared.
- They can be presented from a predefined template, or built dynamically for every query
- It may be required to communicate with other subsystems to build the response, or the bot may be smart enough to give it on its own

Fulfilments – aka "How"? (3/3)

- Examples:

User: Hi there !

Bot: Hey.. How are you?

[preset reply]

User: Is there a direct flight from Lucknow to Amritsar?

Bot: Doesn't look like. However, there are 1-stop options through Delhi

[prepared after contacting an external service]

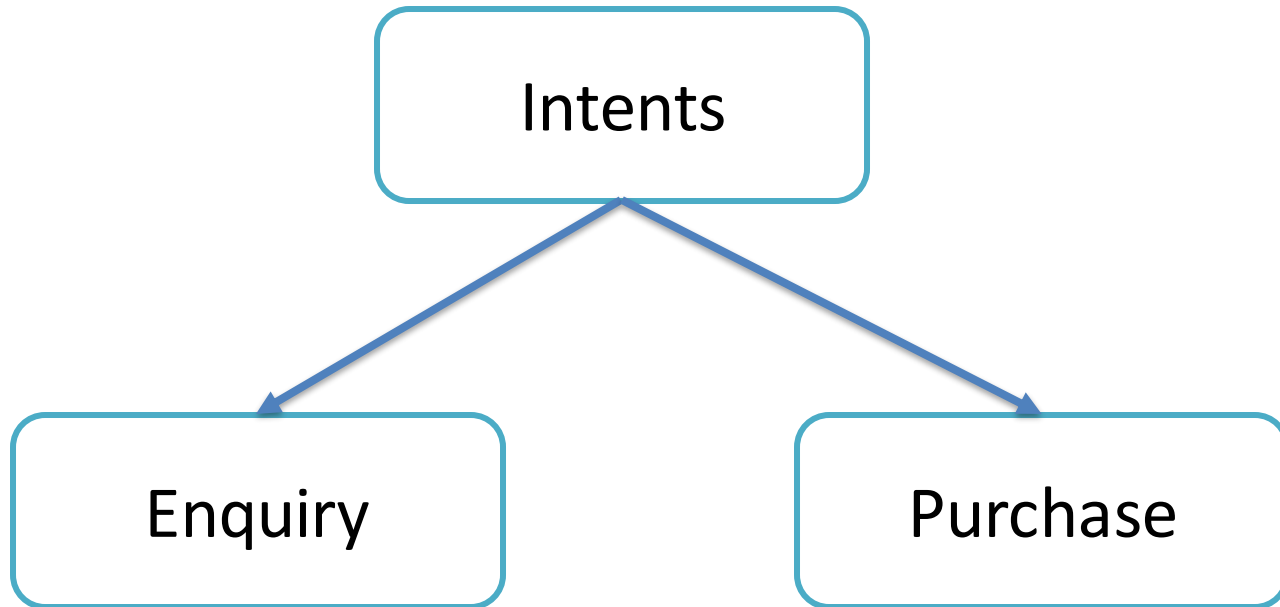
This will be the example we'll use throughout the day !!

EXAMPLE USE CASE

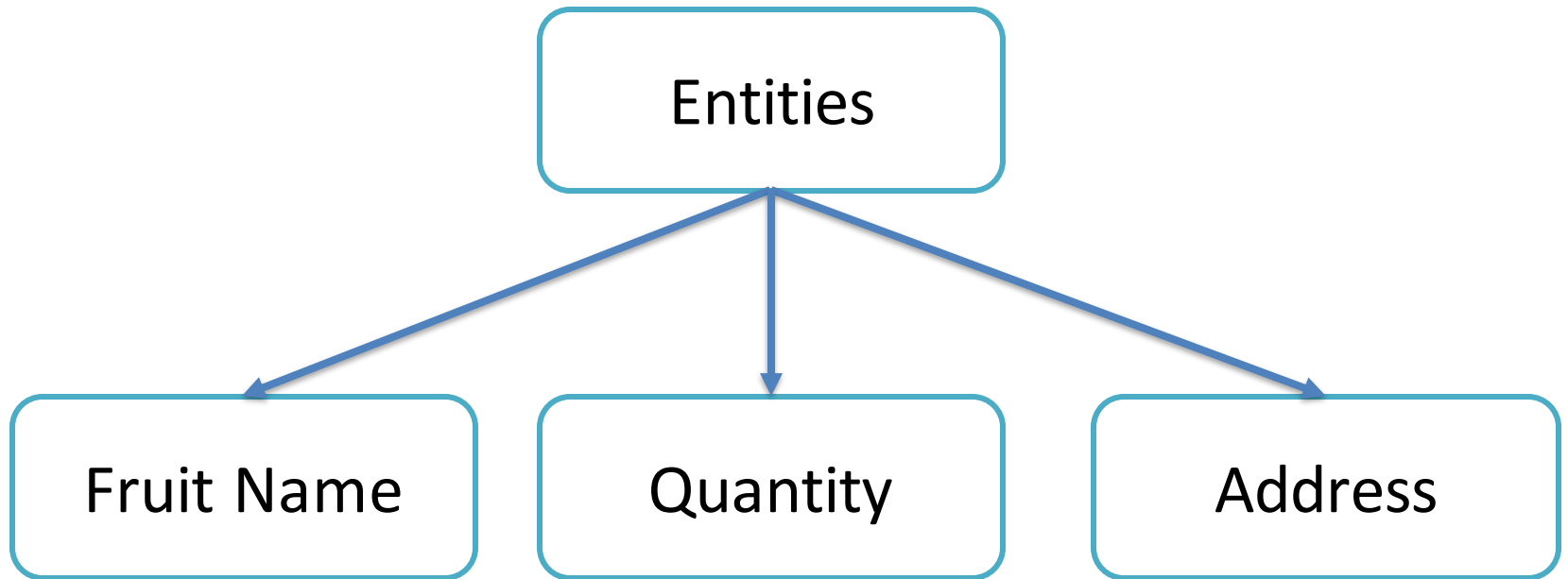
Let's sell some fruits (1/4)

- This will be our sample problem, for which we will build a chatbot using different platforms
- The problem involves building a bot that receives two types of queries
 - A User may ask about the name and price of the fruits that the store sells
 - A User may wish to order some fruit from the shop, by supplying quantity and shipping address

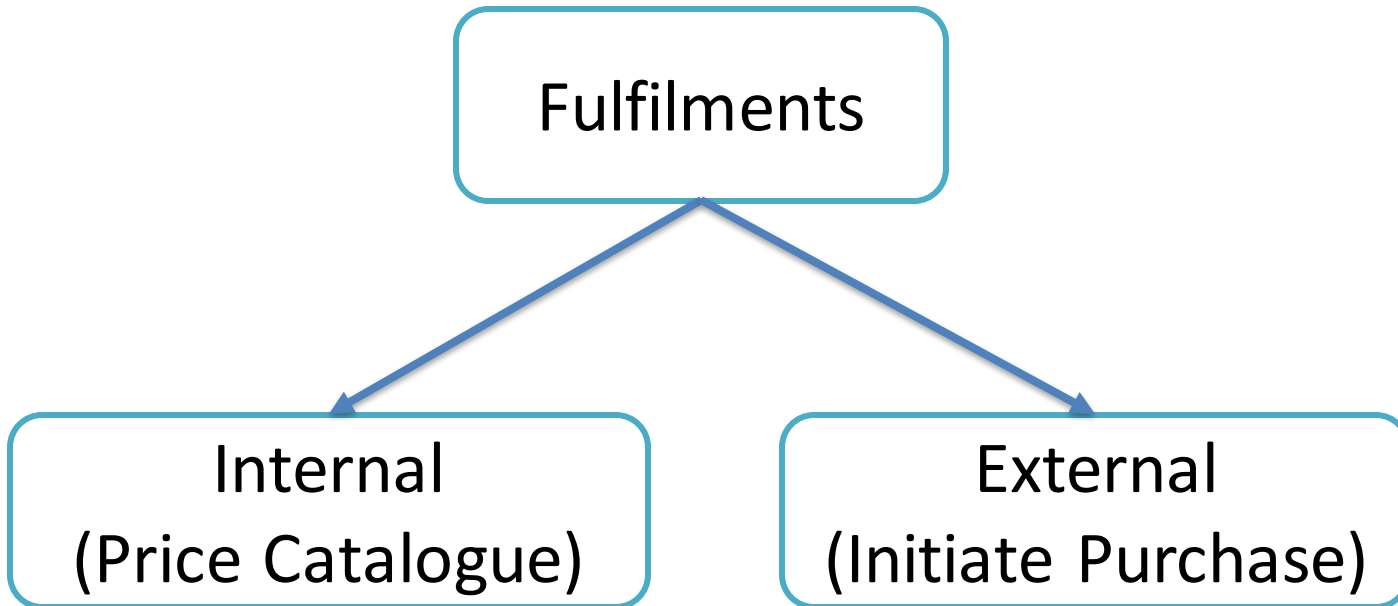
Let's sell some fruits (2/4)



Let's sell some fruits (3/4)



Let's sell some fruits (4/4)



What are we really going to do?

AGENDA FOR NEXT SESSIONS

What will we learn?

- We'll get to know about three "chatbot-building" platforms
 - Google's Dialogflow
 - IBM's Watson Assistant
 - Amazon's Lex
- The sessions will be divided into three sections
 - Building bots with the GUI
 - Your queries
 - API Overview (if we have time)
- We'll build a chatbot in each session for the example use case

Do I need to setup anything? (1/2)

- If you want to try out the steps discussed in the Workshop (strongly recommended), you'll have to do some setup
- You'll be required to have following:
 - A Gmail Account
 - An AWS Account (this is different from your Amazon Retail Account)
 - An IBM Cloud Account
- We can provide you the links to these portals, if you have any confusions

Do I need to setup anything? (2/2)

- If you also want to write some code (it is not required), you should also have the following:
 - Java 8 or later (JDK not JRE), remove any previous versions of Java, in case you have them
 - Eclipse IDE
- The last session will be code-heavy, the sessions before will not discuss much coding

Feedbacks

- We'll take your feedback for each session (except this one)
- Session feedbacks will only take 2-3 minutes
- At the end of the last session, we'll also take an Overall feedback (encompassing what you felt across all sessions)
- Overall feedback should take 5-10 minutes of your time

We'll meet in about 10 minutes

LET'S START !