



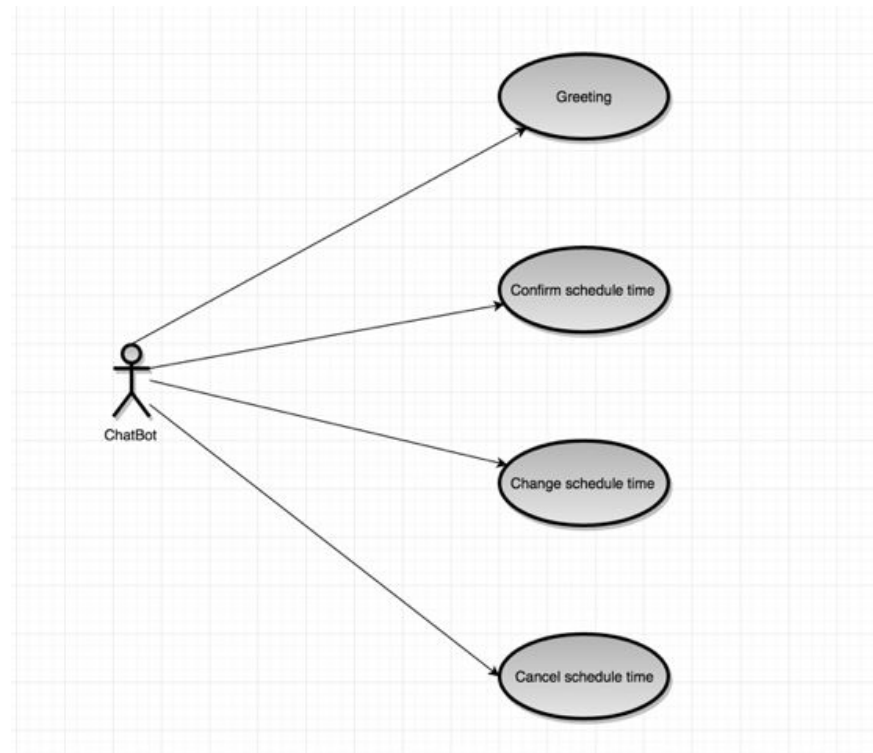
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Chatbot building experiences

Michael

What are main problems when building chatbot?

- How chatbot can understand user's input? → “Detect user intent”
- How chatbot extract info from user input? → “extract entity”
- How chatbot can make correct reply? → “Chatbot behavior”



1. Detect intent? - Solution

- AIML : Artificial Intelligence Markup Language
- Example:

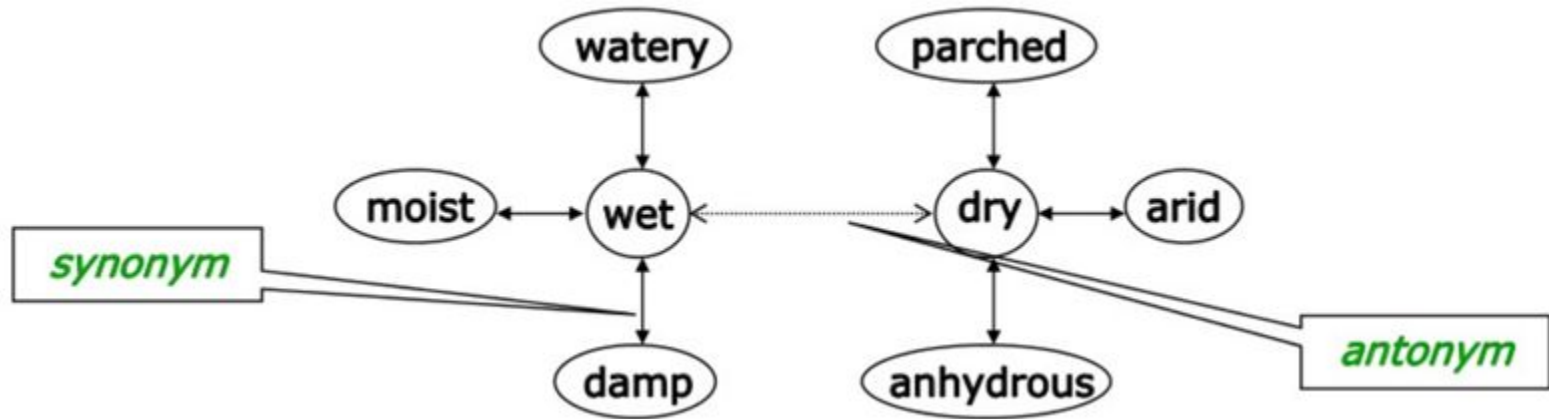
```
<aiml version = "1.0.1" encoding = "UTF-8"?>
  <category>
    <pattern> HELLO ALICE </pattern>

    <template>
      Hello User!
    </template>

  </category>
</aiml>
```

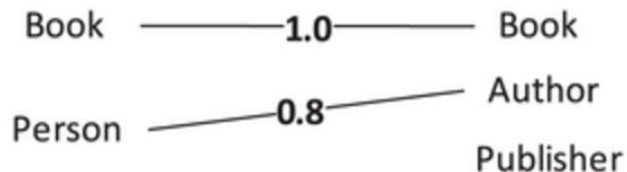
1. Detect intent? - Solution

- Wordnet : is a lexical database for the English language. It groups English words into sets of synonyms called synsets.



1. Detect intent? - Solution

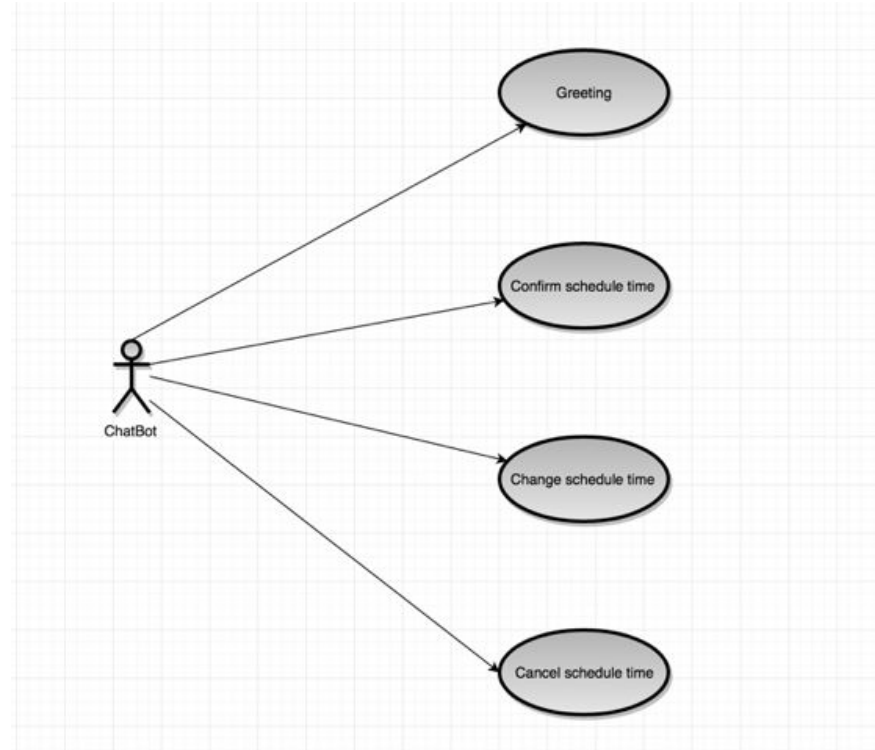
- From wordnet we can calculate one synonym number which explain how is relationship between two words



- And from number between two words, we can calculate the same number for two sentences.
- Example: “I want to change my schedule time” and “Can you change my schedule time?” → have synonym percent is 80% (0.8)

1. Detect intent? - Solution

- With scheduling bot, we can define some intents like:
 - Greeting
 - Confirm schedule time
 - Change schedule time
 - Cancel schedule time.
- For each group we can define some template sentences as training data



1. Detect intent? - Solution

- Example:
 - Greeting: training data would be like: hi, hey, hello...
 - Confirm schedule time:
 - "I want to set my schedule time at 8am tomorrow"
 - "8am tomorrow please"
 -
- With each user input, we can calculate the synonym number between user input and training data to found best sentence → found user intent.

2. Extract name entity

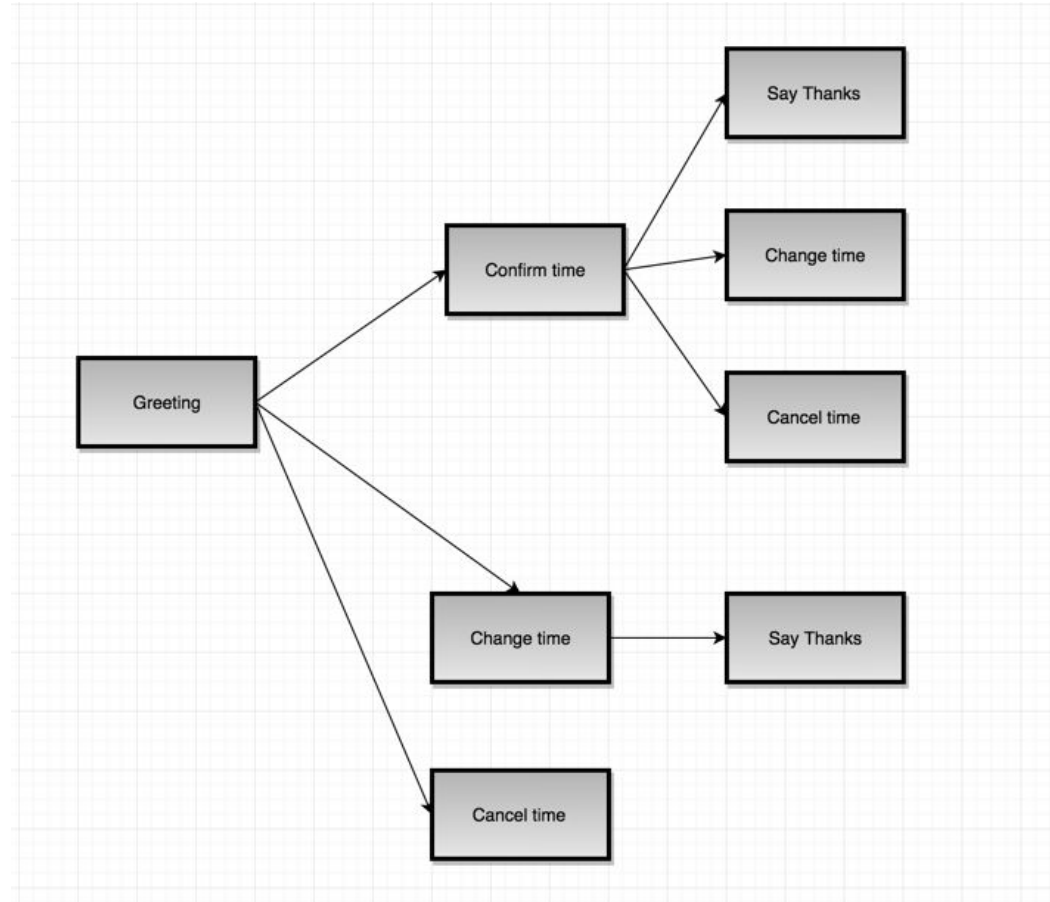
- Entity is information include in user input, like user's name, location, number, time...
- We can use some existing libraries to extract that info, some good libraries:
 - Stanford NLP libs:
 - NLTK

Named Entity Recognition:

		Person	Loc	ORDINAL		Location	
1	President Xi Jinping of China, on his first state visit to the United States, showed off his familiarity with						
	American history and pop culture on Tuesday night.	Misc		Date	Time		

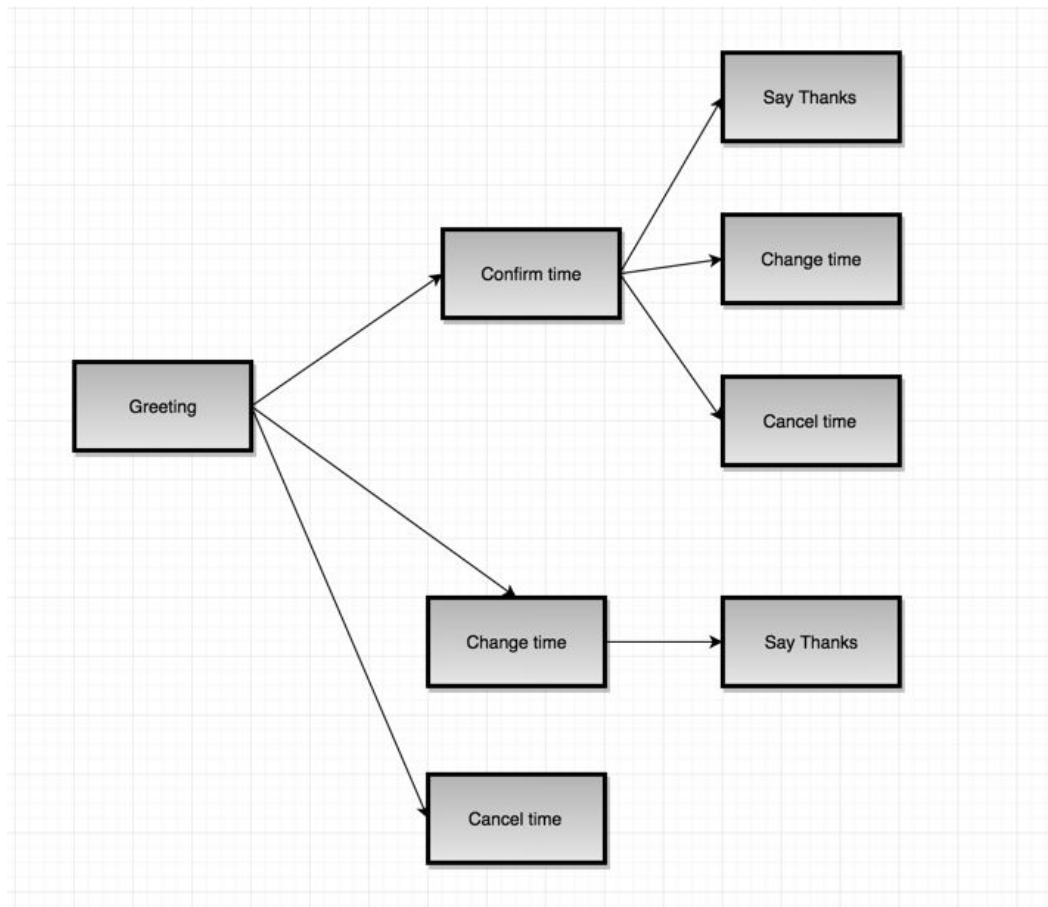
3. Chatbot behavior

- Actually, one chat dialog is the same one TREE with new message always based on prev message.
- Chatbot need remain current user status
- Chatbot need remain next intent user should be want to do → make listen and prepare something to make reply for each intent



3. Chatbot behavior

- Solution:
 - Store current status.
 - Store which intents user should be want to do in next message.
 - Store prev user status to make reply when user ignore current status and he want to change to prev status.





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