1. Stateful chatbots (60%)

In the previous homework you chatbots were stateless: there was no memory about what happened in the previous interaction turns. In this homework you will improve your chatbots with by implementing a finite state machine model of dialogue.

Study the code fsm.html and answer the following questions:

1.1 What is the shortest possible conversation, in number of dialogue turns? (10%)

The shortest possible conversation, in number of dialogue turns is the one with the most inclusive command. I.e. the command that answers most of the questions. In the sample code, the line with shortest possible conversation would be a command like:
 (if (user_said.toLowerCase().includes("play") && user_said.toLowerCase().includes("michael jackson") && state === "initial") {
     response = "ok, playing michael jackson";)

1.2 What is the longest possible conversation? (10%)

The Longest possible conversation is infinite as a loop can be introduced at any point which can keep the conversation going infinitely. An example of a longer version of the conversation from the code would be :
if (user_said.toLowerCase().includes("play") && state === "initial") {
*   response = "Play who?";*
*   state = "play_song"*
* } else if (user_said.toLowerCase().includes("michael jackson") && state === "play_song") {*
*   response = "ok, playing michael jackson";*
*   state = "initial"*
* } else {*
*   response = "i don't get it";*
* }*
* return response;*
* }*

2. Reading: Read the following paper about grownding in communication with children (40%)
http://web.stanford.edu/~clark/2010s/Clark,%20H.H.%20_How%20to%20talk%20with%20chil dren_.2014.pdf

Write an answer to the following questions:

2.1 What are different ways people adapt their speech to different audiences?

There are three ways that people adapt their speech to different audiences.

  a) *Talking for* - when people talk for other people, they adapt their speech to be understood by a class of people, a general group of individuals, this could be adults or even children.

  b) *Talking to* - when people talk to others, they adapt their speech to be understood be the specific person they are trying to communicate with. This form of communication is more designed and effective.

  c) Talking with - when people talk with others, they are engaging in conversation with another person and having a continuous interaction. Therefore, people adapt their speech in this type of conversation to be designed to engage and collaborate.

2.2 What are different ways adults and children achieve grounding in the communication?

When children want something - and want it badly enough - they will persist in trying to reach their goal until until they have reached it (or run into insurmountable barriers or lost interest). Very early on, they realize that for certain goals they need the help of an adult. Therefore, they will use physical cues like shaking their head or crossing their hand versus relaxing their body or nodding and smiling to communicate with adults before they can even use speech to do so. Once they are able to use speech, they will communicate by using sounds as close to a relevant one and persist in a conversation until the adult arrives at the correct conclusion. These are just some of the many ways children use grounding in communication.

Adults prefer self-reairs to other-repairs and do this through repetition. When in a conversation, adults will repeat a number or detail to give the opportunity to the other person to correct if incase of a misunderstanding. They will also provide cues to show understanding by saying things like Uh-huh, and yeah. Children also use repetition but in a way to show self correction and learning.

2.3 How could you incorporate some of the knowledge into your chatbots from the part 1 of the homework?

An interesting way to incorporate some of this learning would be to programme into the chatbot, the ability to repeat after the user to confirm what was said and give the user the ability or opportunity to self correct.

Another way to improve understanding would be to incorporate the ability to keep asking the same question till a recognisable answer is diagnosed. This persistence may lead to better conversations.