The Target of our project is to implement a chess engine on a real life interface, meaning you get to play physically against the machine. The chess engine we are using is Stockfish 9. I downloaded the Chess engine, there are the source files for the engine, written in C++ and there are four exe files. The exe files take text commands as inputs and generate results.

So first comes how to use a chess engine. In general a chess engine is a compiled code that can generate results (best move) based upon the current board pieces, and predict future moves by the opponent. The compilation uses a communication protocol, namely the commands that are used to manipulate the engine and get results

When you google on how to use a chess engine, all you get is how to use the engine to improve your game. We are not focused on that. There is the implementation of chess engines using different GUIs

Some of the GUIs are Arena, WinBoard etc.

We are not using GUIs either, so that’s out of the option too

We need data from the engine and use them to instruct our hardware accordingly, meaning that we have to understand the commands and the results generated, acquire the results and process them in our own code

Matlab is being used, so I downloaded a GUI on Matlab, Chessmaster. It is almost the same as other GUIs, but I think we can look into the scripts this GUI uses so that the necessary parts can be extracted from the codes.

Okay, so there are some documents on the chess engine, namely the commands used in UCI communication protocol. Now first you have to open the exe file, it waits for user input.

*Input🡺 position startpos*

This starts the board at initial position

*Input 🡺 position startpos moves d2d4 e7e5….*

You can add all the moves played since the beginning to give a view of the current board state to the engine.

*Input 🡺 position fen r1bqkb1r/pppp1ppp/2n2n2/1B2p3/4P3/2N2N2/PPPP1PPP/R1BQK2R b*

This is the board position for any time, you have to learn more about board positions by yourself.

*Input 🡺* *go*

Now, this command will predict the next best move for the current player, when you set the position using moves, it will set automatically whose turn it is. But when you use FEN board position, you have to specify in the end whose turn it is, b/w

*Output 🡺 Bestmove d2d4 ponder e5e7*

This is the return value for the command ‘go’. Ponder is the next move predicted by the engine.

How to get fen positions? <https://lichess.org/editor/> set up any position you want.

Voice processing

Voice processing is really not an easy task. It requires significant knowledge of machine learning and signal processing, and none of our team has any knowledge in any of those topics. I came across an interesting topic that can help us in understanding the mechanism of machine learning. It says that a perfect speech recognition program works only when you feed it a lot of data, ie train it. This is why google assistant will work far better than anything we can make and train. https://medium.com/@ageitgey/machine-learning-is-fun-80ea3ec3c471