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Wizard Chess

CMPE 325 – Group 21

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# Idea

The goal of the group’s project is to build a voice-controlled chess board that will move pieces autonomously. Using a built-in microphone, the user can activate the chess board by saying the key phrase, or wake word, “Wizard Chess”, followed by a command. The wake word recognition uses an offline library called Snowboy, while the command speech recognition uses the Google speech recognition, which is online. The board will then use a speaker to repeat the user’s command and ask for confirmation, before making any moves. Upon receiving confirmation, the board will then use its built-in track system, which can move in both X and Y directions, to attach a magnet to the selected piece and move it to the desired location. The machine must be plugged into an outlet for power and connected to Wi-fi for command recognition. This project will allow up to two people to play a full game of chess using only their voices, which provides accessibility to those with disabilities or limited movement.

# Contributions

|  |  |  |  |
| --- | --- | --- | --- |
| Student ID | Name | Accomplished Tasks | Upcoming Tasks |
| 10211533 | Allison Christensen | - Track & Board Design/Construction  - Write Design Decisions and Integration sections  - Amalgamate and edit Assignment 2 | - Improve visuals of track  - Improve movement efficiency of the track |
| 10194574 | Ryan Kinsella | - Track & Board Design/Construction  - Write Task Analysis, Implementation (Hardware) sections | - Improve visuals of track  - Improve movement efficiency of the track |
| 20013052 | Matthieu Roux | - Speech API  - Draw Storyboard  - Write Testing section  - Speech & Logic integration | - Improve voice recognition |
| 20000838 | Tom Heysel | -Researched Arduino – Pi communication techniques  -Configured and installed Nanpy firmware to Arduino  -Wrote test programs to confirm connection between Pi and Arduino is secured  -Researched micro stepping modes and determined 1/32 micro stepping is the best for our application to increase precision of control  -Installed jumpers to CNC shield to accommodate 1/32 micro stepping mode  -Wrote Arduino code to test the movement of steppers  -Adjusted potentiometers on CNC shield to optimize current flow to the motors  -Wrote Arduino code to test the motion of the track, wrote recommendations for second iteration of track construction  -Wrote all Arduino code to facilitate movement control  -Wrote all Python code to facilitate communication between devices and integrated communication into game | -Continued board testing  - Find and fix all potential bugs |
| 20017666 | Dennis Grajo | - Track & Board Design/Construction  - Write Stretch Goals section  - Draw Gantt Chart for Timeline section  - Write Assignment 3 report | - Improve visuals of track  - Improve movement efficiency of the track |

# References

The following are reports that the team used as reference for the construction of the track.

Penn State ESE Final Project Report <https://hackadaycom.files.wordpress.com/2011/05/final_project.pdf>

Arduino Projects forum <https://create.arduino.cc/projecthub/maguerero/automated-chess-board-50ca0f?fbclid=IwAR0nw-yK-LTsae2y53kBv5YnSEP6uuPitmHE2nUapRehlPgFM5mwBwpLqPM>