EE 16B Spring 2017
Final Project

SIXT33N Project Deliverables
DUE DATE: **Friday, April 28th at 10 PM**

I. Demo:

You will be required to demonstrate the functionalities of your SIXT33N robot, either in person during your lab time or by taking a video of it working properly.

Live Demo:
For the live demo, you will show your lab GSI your completed SIXT33N robot. Both partners should be present at the final demonstration.

Video Demo:
Instead of showing your GSI your project in person, you can upload a video of your SIXT33N robot to YouTube. Your video must:
- Start by introducing you and your partner. Each partner's face must be seen in the video
- Explain what commands (words or genres) will be used and the desired behavior corresponding to each command.
- ***The video cannot be edited or sliced – it must be one continuous video***
- The video must be emailed to your GSI *before* **April 28th at 6 PM**

The requirements for Version A: Music Recognition and Version B: Speech Recognition are listed below.

Version A: Music	Version B: Speech

- Indicate your chosen genres
 	
- Set SIXT33N on the ground and play music in the following sequence:
 	
  - Play genre 1 for 3 steps (a cycle of listening, identifying, and moving)
  - Play genre 2 for 3 steps
  - Play genre 1 for 2 steps
 	
- SIXT33N should turn in the first step, and then drive straight for the rest
	- Indicate your chosen command words and the expected action
	
	- Set SIXT33N on the ground and say each command, one per step (a cycle of listening, identifying, and moving)
	
	- SIXT33N should respond with the correct movement
	
	- Each command must be said at least twice, in any order

NOTE: you can re-position SIXT33N in between commands to avoid hitting walls

II. Report:

In addition to your demo, you will submit a 2-page written report for the project. This write up will be uploaded to Gradescope as **proj_writeup.pdf**. The report must be uploaded *before* **April 28th at 10 PM. NO LATE SUBMISSIONS ARE ACCEPTED.**

The following topics should be included:
- Front end circuit: Give the final schematic. Explain each stage of the circuit and why it is needed. Give expressions for the gain and frequency response of each stage.

- PCA Classification: Discuss which commands (words or genres) worked well and which did not. Explain any processing you implemented to make the PCA or classification more robust
- Controls: Give both the open loop and closed loop model. Explain why the closed loop is necessary. Discuss how you selected your k values to make SIXT33N drive straight, and how this was modified to create turns.
- General: Explain what you have learned from the project, and any interesting experiences. Explain why (if needed) your SIXT33N did not function as expected. Optional: Feedback on the project.
- If you did a video demo, include a link to your video

Your report should include the following figures/diagrams:
- Final schematic of your front end circuit with stages labeled
- Block diagram of closed-loop control scheme

A report template and the grading rubric are available on the course website.