CPRE 491 Weekly Report #6

Team 10

Project Title: Embedded Machine Learning

Date: 11/1/2021

Members:

James Gossling

Jackson Lopata

Hailey Lucas

Eric Reusch

Francis Mago

Isaac Stich

Christian Williams

What we've accomplished in the past week/what we've been researching

James Gossling: Narrowed down hardware/found solutions for power and voltage regulation, discussed changes to motor requirements with Jackson

Jackson Lopata: Finalized gear selection, got a basic gear "motion study" in Solid Works, working on more advandence motion study.

Hailey Lucas: Read documentation for AccelStepper library for stepper motors (with acceleration). Began learning Arduino syntax and IDE, as well as tested some examples on a programmable device I have.

Eric Reusch: Research into libraries and similar locking systems. Interfacing with arduino and use of edge impulse refresher.

Francis Mago: Read the Google research paper on using synthetic examples in training a model on a device with limited power and memory. Very applicable to our model training and even provides a model for use.

Isaac Stich: Downloaded the Datasheet for the Arduino Nano 33 33 BLE Sense. Began to look over that to understand how communication between arduino and motors will work.

Christian Williams:Tuned and ran my 3d printer in case we need it. Looked into boards and found that Nvidia Jetson might be best board to do ML on but it is considerably bigger and takes more power than an arduino so it may not work as a substitute board.

What we're planning to do in the coming week

James Gossling: Finalizing hardware list, creating updated system sketch, working on website content.

Jackson Lopata: Finalizing hardware list, continue working on mechanics design and motion study of design

Hailey Lucas: Continue looking into HW/embedded aspects of our design, help work on website, further Arduino learning

Eric Reusch: Continue research for servo manipulation, arduino experimentation, and similar smart lock mechanisms

Francis Mago: Look into using the google model on our Arduino as a potential option. Research more into possible synthetic data libraries for us to use.

Isaac Stich: Continue looking over the microcontroller datasheet and talk to Jackson regarding types of motors and begin looking into what types of inputs that may be needed.

Christian Williams: Look farther into arduino ble sense and get more familiar with the board and take a look at the pin sheet for the board

Issues we had in the previous week

James Gossling: None

Jackson Lopata: none

Hailey Lucas: None

Eric Reusch: None

Francis Mago: None

Isaac Stich: None

Christian Williams:None