IM3080 Design and Innovation Project (AY2023/24 Semester 1)
Individual Report

Name: _____Ng Zheng Ning_____

Group No: _____3_____

Project Title: _____nIEMtendo_____

Contributions to the Project (1 page)

I have contributed mainly to the CV area.

- Integrating Raspberry Pi with camera module.
- Connecting Raspberry Pi with Arduino.
- Hand movement detection algorithm.
- Arduino to play only 1 music.

Reflection on Learning Outcome Attainment

Reflect on your experience during your project and the achievements you have relating to at least two of the points below:

(a) Engineering knowledge
(b) Problem Analysis
(c) Investigation
(d) Design/development of Solutions
(e) Modern Tool Usage
(f) The Engineer and Society
(g) Environment and Sustainability
(h) Ethics
(i) Individual and TeamWork
(j) Communication
(k) Project Management and Finance
(l) Lifelong Learning

Point 1: _____ Modern Tool Usage_____

Morden tool usage like Arduino, Raspberry Pi, OpenCV library etc. these are some of the tools I have never use before prior to this project. For Arduino it is like a micro-controller. This small computer is used as the brain of the robot. It can be programmed to control the way buttons, motors, switches, lights, and other electronic parts work together. I've managed to grasp the basics functionalities for Arduino and more importantly using it to integrate/connect with Raspberry Pi a microprocessor. As my part is more involve with using the Raspberry Pi and OpenCV to develop the function which is by using the hand movement to control the snake of our game. The Raspberry Pi is a more powerful system than Arduino and we require it to integrate OpenCV with it. It took me awhile to get used to it as is like a minicomputer that's running on Linux, and we mainly use the Python language to code. In the Raspberry Pi we installed the OpenCV libraries as well as the Raspberry PI camera module libraries for the function to work. However, it wasn't without its challenges. Debugging code, optimizing performance, and fine-tuning algorithms. From transforming raw camera data into actionable insights using OpenCV to synchronizing the hand movement to control the snake movement, every milestone felt like a triumph, and I've really learned a lot through this process.

Point 2: _____ Individual and TeamWork _____

Individual and teamwork is an important part especially in our hardware project. Fulfilling the roles and responsibilities given by the leader to each individual is something that we need to try to achieve in order for the project to be a successful one. As it is a short 13th week project, we need to try to achieve the job given within the timeframe that it is set to complete. Individually we need to step up and try to give our best to complete the job. Like taking extra time outside of the lesson time to research and try to pick up the skills that are required for the job so that we will not delay and affect the others doing the project together. For teamwork area, we should try to be more proactive and try to help others if they are in need. Voicing out maybe a small thing but is quite important in projects like this to be a successful one. If you're unable to achieve the target given to you, you should voice out and ask for help only then we will be able to help one another and complete the project within the timeframe. While individuals may drive progress, it's the combined efforts of a cohesive team that truly propels innovation and achievement within a limited timeframe.

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