EEET2610 – Engineering Design

Peer Evaluation Report

Group K

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# Abstract

An abstract is a brief summary of the report. Its main purpose is to provide readers with a concise and accurate overview of the content of the paper, enabling them to quickly understand the key points and decide whether to read the full text.

Overall, an abstract should be clear, concise, and well-written, with a focus on providing the reader with the most important information about the report.

This document served as a mini report on the work of team members during the course and to give the lecturer a guide on how much grade to give each individuals, in other words, a peer evaluation report .The main objective of this course is to construct and operate a quadcopter based on a wood frame that has a span of approximately 60 cm and has the ability to self-balance mid air. The flight controller is built around an ESP32 microcontroller, which uses the espnow protocol to interact wirelessly with other ESP32s and is connected to a computer via a USB cable.

The following is the work the student Nguyen Nam Vinh completed: the drone remote controller's assembly, programming of the drone-to-controller connection (espnow), and testing of the controller-to-drone connection

# Self-reflection about the project

* 1. Summary of the project:

The goal of this project is to construct a quadcopter drone which has the ability to self-balance and is able to be controlled using a controller. Our drone in particular has a frame made out of wood and used 3d printed parts to hold the motors in place, the controller is created by sticking components (joystick, buttons, potentiometer) on a breadboard, both the drone and the controller utilize an esp32 board and is connected together using the built in long range connection capability of the board called espnow.

* 1. Summary if the teamwork:

Our team style of team work is more individualized, what I meant by that is that every time we come to work together, we would spread the work between each member and everyone will do their own work and near the end of the day we would meet up and put our work together to see if it makes sense. If it doesn’t make sense then we will talk among ourselves to see which part went wrong and whoever responsible for that part will go fix it, if other members have the time they will go and help with it. For further communication we would also talk at home via an online chat service named messenger to plan work for the next time, buy components if needed and report findings(this is when a member is taking the work home to work on it further).

* 1. Self-reflection on the contribution of the student to the project:

As one of the software guys, my work is mainly on coding. I oversee the controller and its connection to the drone. I am the one to construct the controller and code its functionality, I wrote code to send the Pid, IMU data from the drone back to the controller, I also wrote code on how it would impact the drone directly, as to how it works along with the Pid, Tran Dai Phuc – S3924715 , the person in charge of the code for Pid control helped me with it. I also helped a bit during the construction of the drone.

At the end of the project, I felt like my part of the work is quite well done as the controller work without a hitch, but I must say that I blundered a little bit during the project, for example there was a problem with calibrating the motors, I thought that it would be safer to calibrate the motors using a keyboard to send maximum and minimum signals to them with each click so I spent like an hour trying to send the keyboard click data from the controller side to the drone to calibrate it. It worked at the end but later on in the project I realized that I could just calibrate it very easily without a keyboard. Although this incident did help me gain insight on how espnow works, it did waste my team’s time. There was some other time when I blundered but all in all I felt like I did a good job.

* 1. Feedback on the project, future improvements, and applications

This project was quite strange for me as I am a software engineer student, I have never worked this much with the hardware part of things, not to mention I myself have never taken the control system course so Pid tuning is also difficult to understand. But despite these I found this course to be one of the most enjoyable as I have learnt a lot of things and I have done my part of the work well.

In the future I would be quicker to look for the documents of the hardware parts before working with the, I would also tunnel vision less and experiment and I also would consult my teammate more when I do my work and I would test out the equipment before working with them to ensure safety when putting things together.

The knowledge I gained from this project can be applied for when I need to write code for robotics project as I now have a better understanding of PiD control and the connection between physical components.

**2. Peer evaluation that will be used to grade your teammates**

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| **Role and Responsibilities** | |
| **Team Member’s Name** | **Task Given** |
| A. Nguyen Duc Nghia – S3926975 | - Design the assembly of the drone  - Design 3D models  - PCB design |
| B. Hoang Nguyen Bao Duy - S3927196 | -Soldering  - Assist mechanical assembly  - Order parts |
| C. Tran Dai Phuc – S3924715 | - PCB design  -Wire soldering, PCB soldering  -PID controller |
| D. Nguyen Viet Quan – S3926217 | - Assembly of the drone  - Matlab data visualization |

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| **Criteria** | **Excellent (5)** | **Good (4)** | **Fair (3.5 to >2.5)** | **Poor (2.5 to >0)** | Student A | Student B | Student C | Student D |
| **Communication:**  **Effectively communicate ideas, information, and concerns.** | Demonstrates clear and concise communication skills, actively listens, and conveys thoughts effectively. | Generally, communicates well but may occasionally encounter difficulties in conveying ideas or actively listening. | Communication is average but may require improvement I clarity or attentiveness. | Struggle to communicate effectively, resulting in misunderstandings or a lack of clarity. | 2.5 | 2.5 | 2.5 | 2.5 |
| **Responsiveness: Promptness and willingness to respond to messages, requests, and deadlines.** | Consistently responds promptly and efficiently to messages, requests, and deadlines. | Generally responsive but occasionally may experience delays or require reminders. | Responses are sometimes delayed or require follow-ups to ensure completion. | Frequently unresponsive or fails to meet deadlines, causing delays or disruptions. | 2.5 | 2.5 | 2.5 | 2.5 |
| **Reliability: Dependability and consistency in fulfilling tasks and commitment.** | Consistently delivers high-quality work, meets deadlines, and fulfills commitments. | Generally reliable but may occasionally encounter difficulties in meeting deadlines or fulfilling commitments. | Some inconsistencies in fulfilling tasks or meeting deadlines, requiring reminders or additional support. | Often fails to deliver work on time or fulfill commitments, causing disruptions to the team. | 2.5 | 2.5 | 2.5 | 2.5 |
| **Teamwork: Collaborate effectively with others and contribute to a positive team dynamic.** | Actively participates, cooperates, and contributes to the team’s goals, fostering a positive team environment. | Generally, works well with others but may encounter occasional difficulties in collaboration or contribution. | Demonstrates average teamwork skills but may require improvement in collaboration or contribution. | Struggles to collaborate effectively, resulting in conflicts or hindrances to the team’s progress. | 2.5 | 2.5 | 2.5 | 2.5 |
| **Total** | | | | | 10 | 10 | 10 | 10 |

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