Department of Electronic and Telecommunication Department

University of Moratuwa

EN2160 – Electronic Design Realization

Expectations of Group Formations

Group B

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Introduction

Three groups of us are developing, a long-range 3D mapping device using LiDAR sensors, a short-range 3D mapping device using ToF sensors, and an orientation detection and correction industrial end effector using ToF sensors. All of us are developing mapping systems using range sensors. From my point of view and based on our discussions, since our goals and requirements are similar, our collaboration will offer several advantages for us in the following aspects.

Learning Outcomes and Expectations

1. Identify a suitable design model for a given problem.

Collaboration with other groups facilitates the identification of a suitable design model by allowing us to compare goals and requirements across projects. Through discussions, we recognize similarities in tasks and objectives, which helps in determining the most effective approach to solving the problem at hand. By leveraging the collective expertise of all groups, we can identify the most appropriate design model that aligns with our shared objectives, maximizing the likelihood of project success.

2. Design testable PCBs complying with industry standards.

In our collaborative effort, we share knowledge and resources related to PCB design, enabling us to develop testable PCBs that adhere to industry standards. By pooling our insights, we optimize PCB layouts and component selection to ensure functionality and reliability. Additionally, collaborating on testing methodologies allows us to implement robust testing procedures, validating the integrity of our PCB designs and verifying their compliance with industry standards.

3. Explain testing methodologies used in electronic manufacturing.

Cross-group testing, and validation are integral components of our collaborative approach, enabling us to identify errors and inconsistencies in the electronic manufacturing process. By leveraging the collective expertise of all groups, we discuss and implement testing methodologies tailored to the specific requirements of LiDAR sensors, ToF sensors, and industrial end effectors. Through collaborative efforts, we enhance the reliability and effectiveness of our testing procedures, ensuring the quality of our products.

4. Design product enclosures complying with industry standards.

Our collaboration extends to the design of product enclosures, where we share knowledge of mechanical parts and industry standards. By collaborating on

enclosure design, we integrate feedback from other groups to optimize designs for compatibility and functionality. Furthermore, ensuring compliance with industry standards for product enclosures is paramount, and by working together, we can address safety and usability requirements more effectively, ultimately enhancing the quality of our products.

5. Prepare proper documentation for electronic design.

Maintaining open communication channels is crucial for sharing documentation templates and guidelines among groups. Collaboratively, we document algorithms, data processing techniques, and component specifications to ensure consistency and completeness in our documentation. By leveraging shared knowledge and resources, we create comprehensive documentation that facilitates project understanding and replication, ultimately contributing to the success of our collaborative efforts.

6. Apply the knowledge gained to a commercial design project resulting in a working prototype.

Through collaboration, we apply the knowledge gained to commercial design projects, accelerating the development process. By integrating components and technologies from different projects, we enhance product functionality and interoperability. Additionally, collaborating on protocol standardization ensures seamless integration between different components of the overall system, ultimately leading to the successful development of working prototypes and demonstrating the effectiveness of our collaborative approach.

Conclusion

In conclusion, I believe this is a valuable opportunity for us to collaborate as a team, offering numerous advantages as discussed above. To foster greater collaboration, I suggest having regular meetings to review our progress. By doing so, we can anticipate even more positive outcomes from this collaborative effort.