



Department of Electronic & Telecommunication Engineering,
University of Moratuwa, Sri Lanka.

Pick and Place Robot Arm

Expectations of Group Formation

Discussion Group C
210179R Gammune D.J.T.

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Abstract

Our collaboration strategies will focus on clear communication channels, equitable task allocation, and alignment with the course's learning outcomes. We plan to implement bi-weekly meetings, utilizing platforms such as Zoom and WhatsApp for regular updates and quick communication. Additionally, we will use Google Drive for document sharing, and Google Forms for feedback gathering after collaborative sessions.

To ensure a balanced workload and skill development, our collaboration mode will involve a rotation of responsibilities among group members. This rotation will allow each member to engage in various aspects of the project, contributing to enhanced understanding, improved problem-solving, and effective teamwork, aligning with the course's learning outcomes.

The ultimate goal of our collaboration is to collectively apply the knowledge gained to a commercial design project, resulting in the development of a working prototype of the robotic arm system. This abstract provides an overview of our planned collaboration mode, and the detailed documentation will be submitted for evaluation at the end of the lab session.

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1 Introduction

Our group met to discuss and plan how we can collaborate effectively. The objective is to outline our collaboration mode, strategies, and ensure a seamless working environment.

2 Collaboration Mode

2.1 Communication Channels

We recognize the importance of effective communication. Therefore, we have decided on the following channels:

- **Bi-weekly Meetings:** We have been and will conduct bi-weekly virtual meetings physically or using Zoom. These meetings will serve as a platform for in-depth discussions, progress updates, and problem-solving sessions.
- **Dedicated Whats App Channel:** For quick updates, questions, and announcements, we will utilize a dedicated group on WHats App. This will allow for continuous communication and information sharing.
- **Google Drive for Document Sharing:** All important documents, including collaborative reports, project files, and meeting minutes, will be stored and shared through Google Drive. This ensures a centralized location for document access and collaboration.
- **Task Management on Google Sheets:** To manage tasks efficiently, we will use Google sheet. This platform allows for clear task allocation, progress tracking, and easy identification of completed and pending tasks.
- **Feedback Forms:** After each collaborative session, we will utilize Google Forms to gather feedback from each group member. This will help in assessing the effectiveness of our collaboration strategies and making necessary adjustment and to discuss the pros and cons of the project

2.2 Task Allocation and Rotation

We recognize the importance of fair task allocation. To ensure a balanced workload and skill development for all group members, we will rotate responsibilities among tasks. This rotation will happen on a bi-weekly basis, allowing each member to engage in various aspects of the project.

3 Learning Outcomes Alignment

Our collaboration strategies are aligned with the learning outcomes of the course, which include:

3.1 Identify a Suitable Design Model for a Given Problem

In the process of designing the robotic arm system, we will collaboratively apply engineering principles, considering the specific requirements of assembling H-Bridge components. The chosen design model will ensure efficiency, precision, and compatibility with industrial applications.

3.2 Design Testable PCBs Complying with Industry Standards

As a group, we will integrate electronic components, including transistors, onto a PCB (Printed Circuit Board). The collaborative effort will adhere to industry standards, enabling efficient testing and integration into the overall robotic arm system.

3.3 Explain Testing Methodologies Used in Electronic Manufacturing

Throughout our collaborative development, we will implement rigorous testing methodologies to collectively validate the functionality and reliability of the robotic arm system. This includes testing electronic components, control algorithms, and the overall system to ensure it meets specified standards.

3.4 Design Product Enclosures Complying with Industry Standards

The collaborative approach to the design of the robotic arm system will extend to the enclosure, ensuring it collectively complies with industry standards. This includes considerations for safety, durability, and environmental factors.

3.5 Prepare Proper Documentation for Electronic Design

Together, we will create detailed documentation for electronic design. This collaborative effort will encompass design specifications, testing procedures, assembly instructions, user manuals, troubleshooting guides, maintenance instructions, and safety guidelines.

3.6 Apply the Knowledge Gained to a Commercial Design Project Resulting in a Working Prototype

The culmination of our collaborative effort will be the development of a working prototype of the robotic arm system. This will not only showcase the practical application of the knowledge gained but also serve as a testament to the successful implementation of engineering principles in a real-world scenario.

4 Conclusion

This comprehensive collaboration plan, encompassing communication channels, task allocation strategies, and alignment with learning outcomes, will be submitted at the end of the lab session for evaluation.