Executive Summary:

1. Explanation of the Original Design Problem:

   The original design problem we faced was multidimensions, causing system level delays. One of the main challenges was the integration of deep camera and LiDAR sensors, which required a specific library. We also had to figure out the architecture that would connect these sensors with the deep camera and the Linux machine. This task was complex and required us to consult with our instructor, Don, to understand the necessary steps.

   In addition to these challenges, we encountered issues with our initial PCB design. We realized that the PCB was not functioning as expected, which led us to understand the importance of thorough verification before proceeding to production. This experience taught us the value of rigorous testing and validation in the design process, and we incorporated this lesson into our subsequent work.

   These complexities made the problem challenging, but also provided us with numerous learning opportunities and a deeper understanding of system design and integration

2. Approach to the Project:

   Our team approached the project from a system level perspective. We first identified the blocks for the deep camera and LiDAR sensor and then worked on how to connect their inputs and outputs to the Linux machine. This process involved a lot of problem-solving and collaboration among team members.

   When we encountered issues with our initial PCB design, we sought help from our mentor, Andrew. His guidance was invaluable in helping us understand how to design and validate power supply designs for PCBs. With his assistance, we were able to correct the issues with our PCB design and learned important lessons about the design and validation process.

   This experience reinforced the importance of seeking expert advice when faced with challenges, and it also highlighted the value of thorough testing and validation in the design process. These lessons have been instrumental in our approach to the project and have helped us overcome the challenges we faced.

3. The Project Timeline:

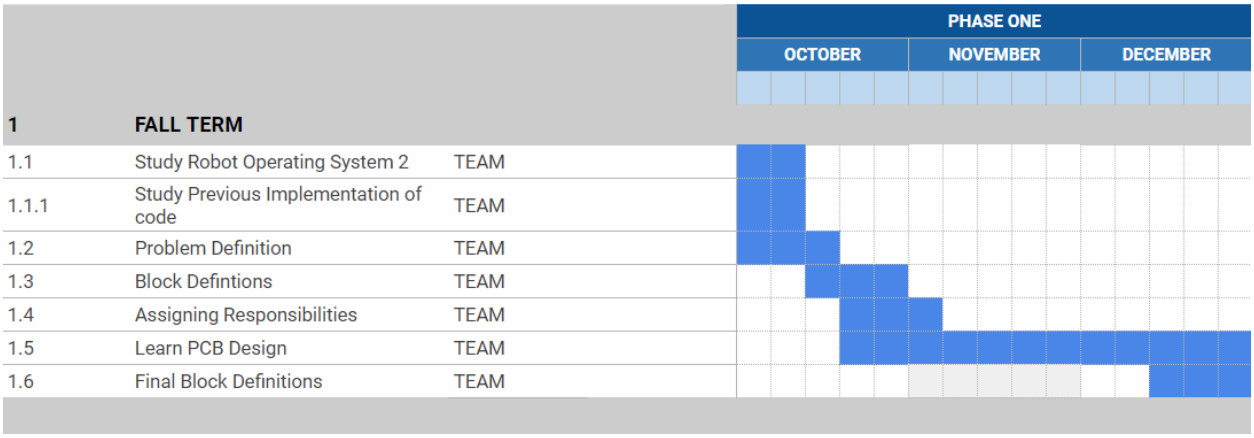

Figure 1: Fall Term Project Gantt Chart

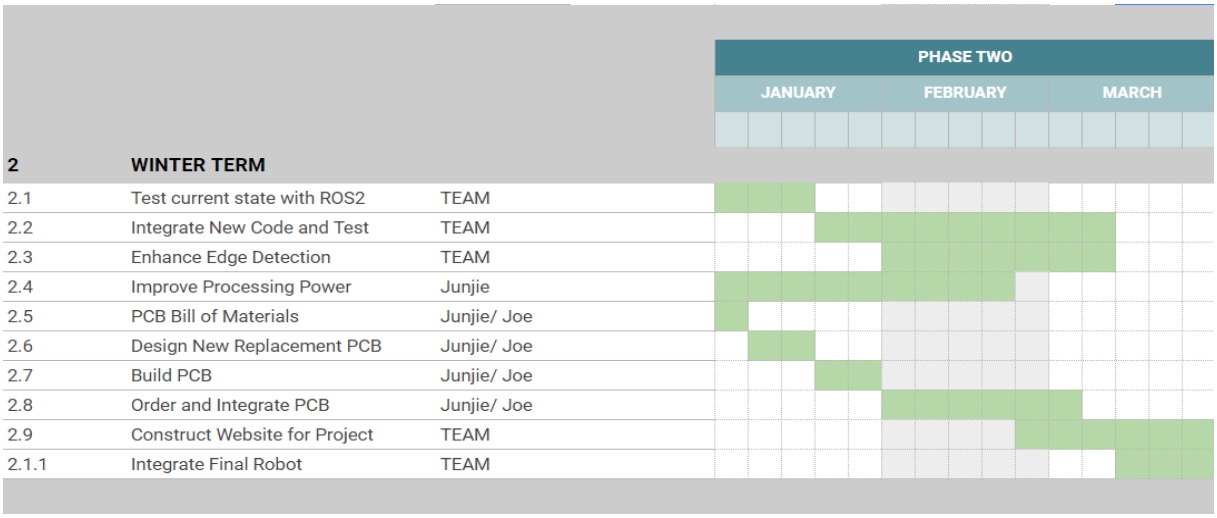

Figure 2: Winter Term Project Gantt Chart

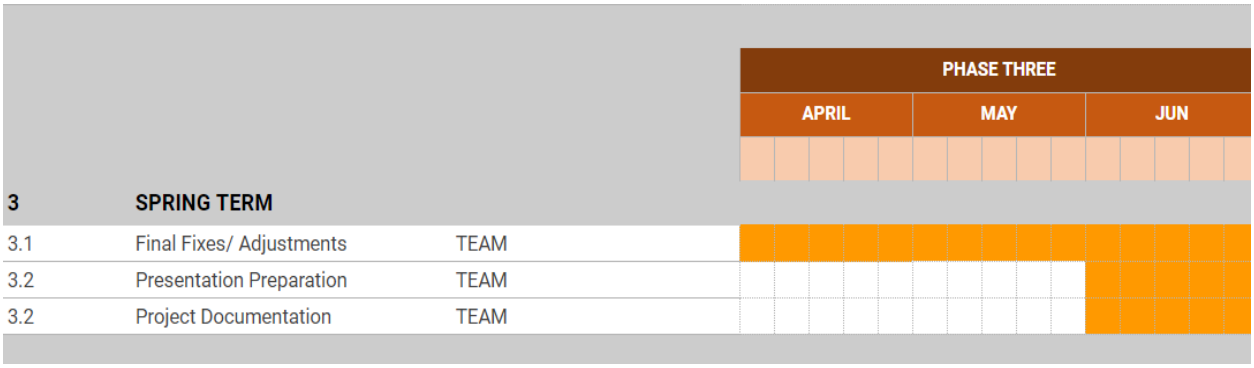

Figure 3:Spring Term Project Gantt Chart

4. Key Lessons Learned: The project has been a rich source of learning for our team. One of the most significant lessons we learned was the importance of effective communication. We found that regularly sharing updates, tracking each member's contributions, and stepping in to assist when a teammate was facing challenges were all crucial to our collective progress.

   The importance of proper planning. We realized that having a clear, well-structured plan from the outset helped us stay organized and focused, and made it easier to track our progress and make adjustments as needed. We also learned about the importance of finding the right fit for each team member in terms of roles and responsibilities. We found that when team members were assigned tasks that aligned with their skills and interests, they were more engaged and productive, and the quality of their work was higher. Finally, we learned about the value of a shared skill set. Having a common understanding of key concepts and techniques allowed us to work more effectively as a team, as we could better understand and contribute to each other's tasks. These lessons have not only helped us in this project, but will also be invaluable in our future work.