



Lighting Talk 2:Project Plan

Team 1



Project Overview

Our project is to develop a solar cell and battery to be used to power and charge an electronic derailleur (device used to shift gears on a bike). Our client, Dr. Raman, has given us a specific model of derailleur to make this battery compatible with, as well as a set of tolerances concerning size, function, and resilience of the final assembly.



Project Management

- We will be using Waterfall+Agile management style
- Allows us to shift styles based on each stage of the project
- We will keep track of progress in our weekly meetings and over discord/email
- A shared spreadsheet will also be created to help track progress and record work hours



Task Decomposition

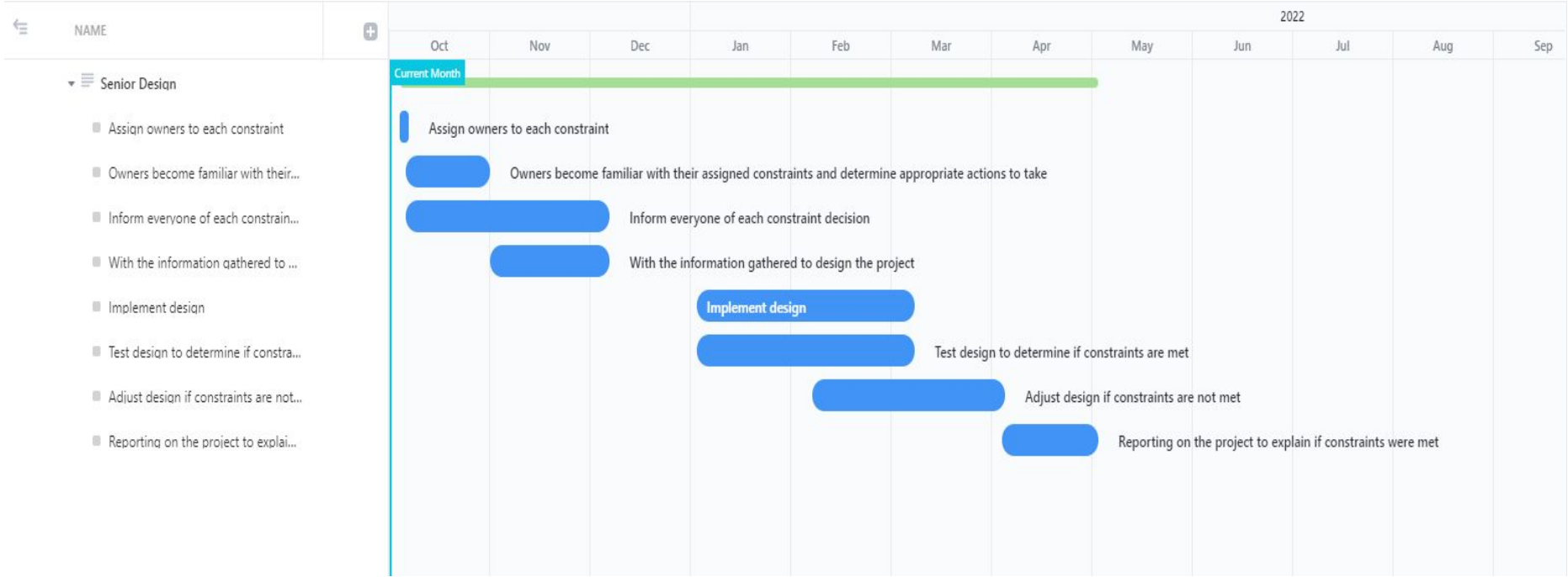
- Complete Individual Research with a write-up - November 8
- Compile information with secondary write up - November 19
- Design completed with schematic - December 10
- Test on breadboards individual parts/components - February 14
- Revisions as needed through the testing process
- Revisit design to implement changes due to testing and have a discussion - February 28
- Order printed circuit boards - Early March (as soon as possible)
- Build and test with PCB update process with pictures/video and explanation - March 11
- Implement design - end of April



Project Timeline

- Assign owners to each constraint - October 6
- Owners become familiar with their assigned constraints and determine appropriate actions to take.- October 6 - October 31
- Inform everyone of each constraint decision - October 6 - December *weekly meeting
- With the information gathered to design the project - November - December
- Implement design - January - March
- Test design to determine if constraints are met - January - March
- Adjust design if constraints are not met - February - April
- Reporting on the project to explain if constraints were met - April - May

Schedule (Gantt Chart)





Risks/Risk Mitigation

- Individual research may be overwhelming depending on team member/task assigned
 - Will check progress during weekly meetings to catch workload issues early and act accordingly
- Compiling design from individual research will likely reveal conflicts with constraints
 - Make compromises in design based on what constraints are possible and the client's priorities
- Implementing /testing may reveal issues not considered in the design phase
 - We will have to adjust to new issues and select new parts where necessary, deliberately left a large time here
- Adjusting in all steps may leave some constraints unmet
 - We will prioritize constraints based on our weekly meetings with the client.

Risk mitigation plan leans heavily on frequent communication in our weekly meeting with each other and the client, it will be important to keep these up over the course of the project.



Personal Effort Requirements

- Individual research and write ups: 20 hours
- Design with schematic: 15 hours
- Prototyping and testing: 50 hours
- Build and test final product: 30 hours



Other Resource Requirements

- PV Array
- Battery
- Deraillleur
- Electrical components
- Enclosure - depends on the prototype