Lightning Talk 4

Project planning

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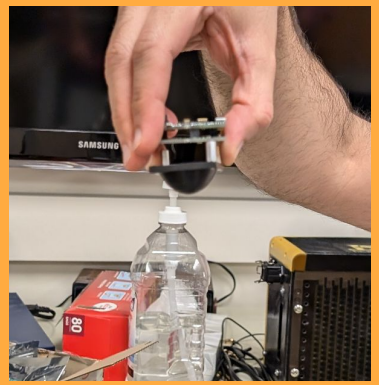
Project Overview

- **M**illimeter wavelength **A**rmed **V**oron (**MAV**inator) scanner
  - Voron 3D printer platform
- 3D Scanner design
  - Stepper motor
  - Belt driven gantry
- User interface
  - Web enabled application
  - Python
- Predetermined path to cover the scan bed



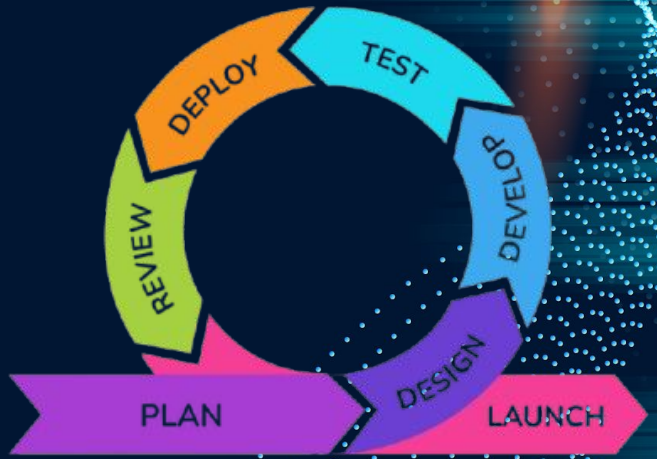
Problem Statement

- Time consuming process
- Not enough scanners
- Expensive

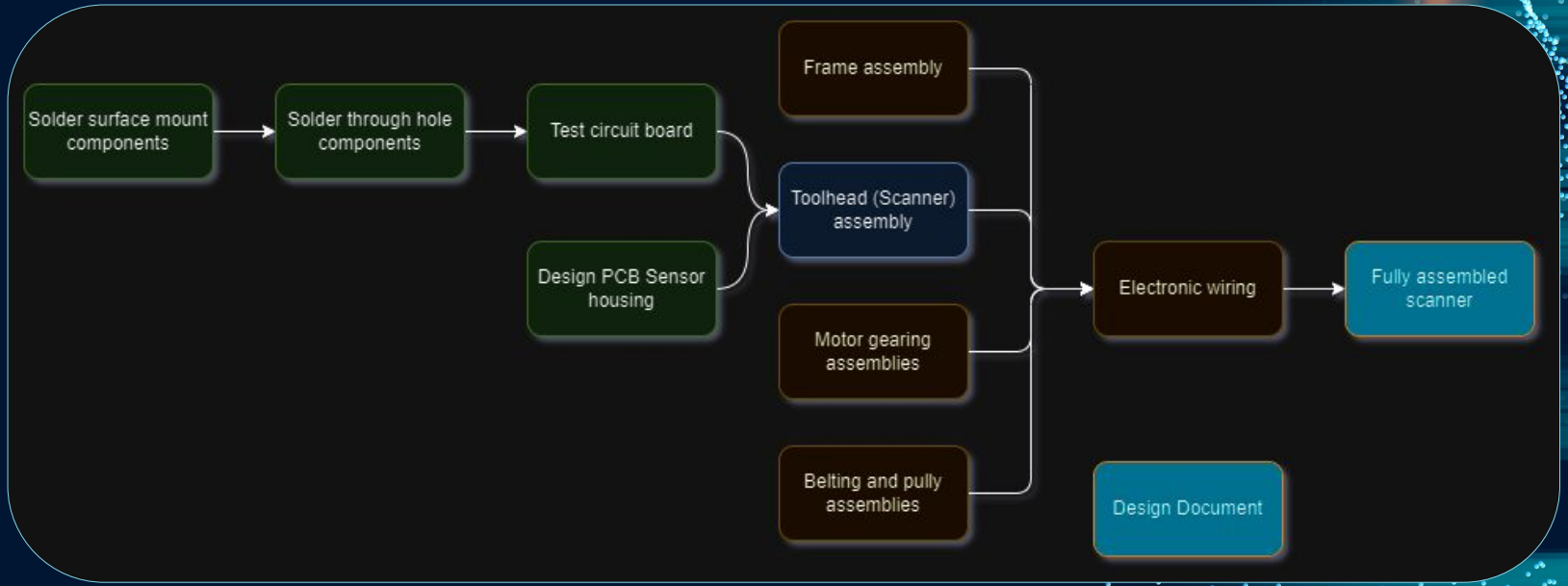
- Build cheaper scanner
  - Large scan volume
- Simple user interface
  - Remotely accessed
- Better than ever

Project Management Style

- Soldering the circuit board
  - Program the boards
  - Testing the circuit
  - Building a housing for the boards
- Building the Voron Printer
  - Assemble frame
  - Assemble electronics
- Writing the Software
  - Program the Raspberry Pi
  - Create a web app
- Weekly team meetings
- Biweekly client/advisor meetings
- Participative/Pacesetting Management style

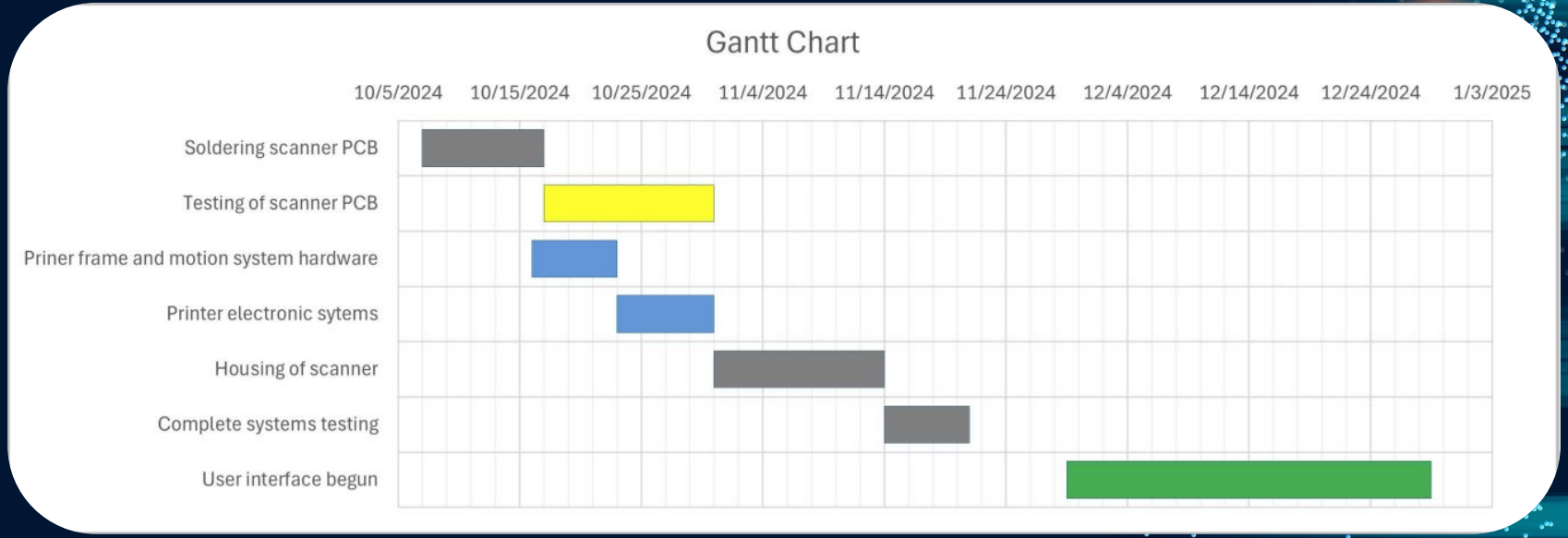


Task Decomposition



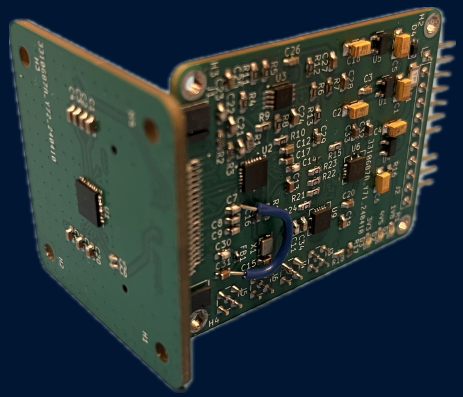
Gantt Chart

- Finished physical build before Thanksgiving break



Key Milestones

- Finish PCB testing
- Finish building the Voron printer
- Integrate the PCB with the Voron printer



Criteria for Evaluation

1. Does the PCB perform as expected?
2. Does the Voron printer move accurately to within 1mm precision?
3. Is there a web app that the MAVinator can be controlled through?
4. Is the web app aesthetically pleasing?
5. Does the scanning system effectively use millimeter waves to scan an object?
6. Does the SAR imaging system work?
7. Can we detect a metal object at least 2.5mm in width through an opaque surface?

Key Risks

- PCB not working as it should
  - Has been an issue in the past
- Gantry is out of square
  - High likelihood, low impact
- Sensor head can not determine its position
  - Low likelihood, high impact
- Printer build falls off schedule
  - Middle likelihood, middle impact

Risk Management

- Work closely with others who have built this PCB
- Have weekly meetings with our team
- Have biweekly meetings with our advisor
- Software protections and redundancies to prevent sensor damage
- Checking frame alignment as progress is made and double verified construction

Conclusions

- Use agile management strategy
- Key milestones for this semester:
  - PCB testing, Voron printer build, and integration of these two parts
- Risk involved in the PCB and scanner build
  - Mitigate with team and advisor meetings
  - Mitigate build flaws with team verification
  - Mitigate sensor damage with software

Thank you