Lightning Talk 7

Prototyping
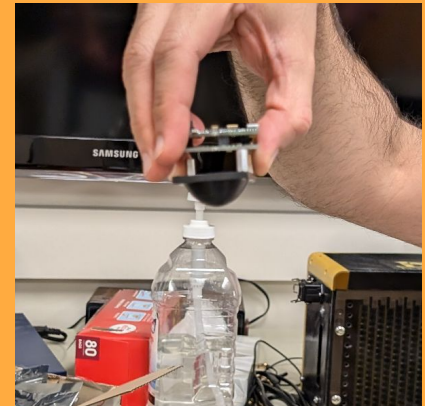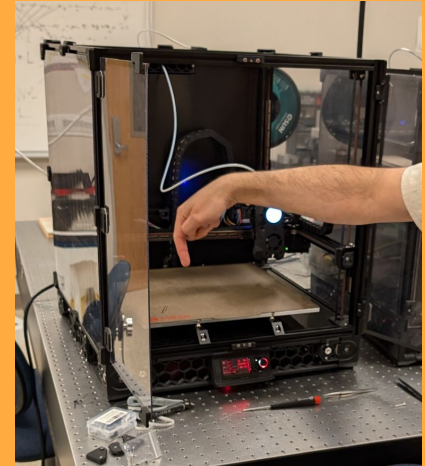SDMay25-15
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Project Overview

- **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

Prototyping: Overview

Our project is a prototype overall for the finished scanner and what we have made will be refined into the finished product next semester.
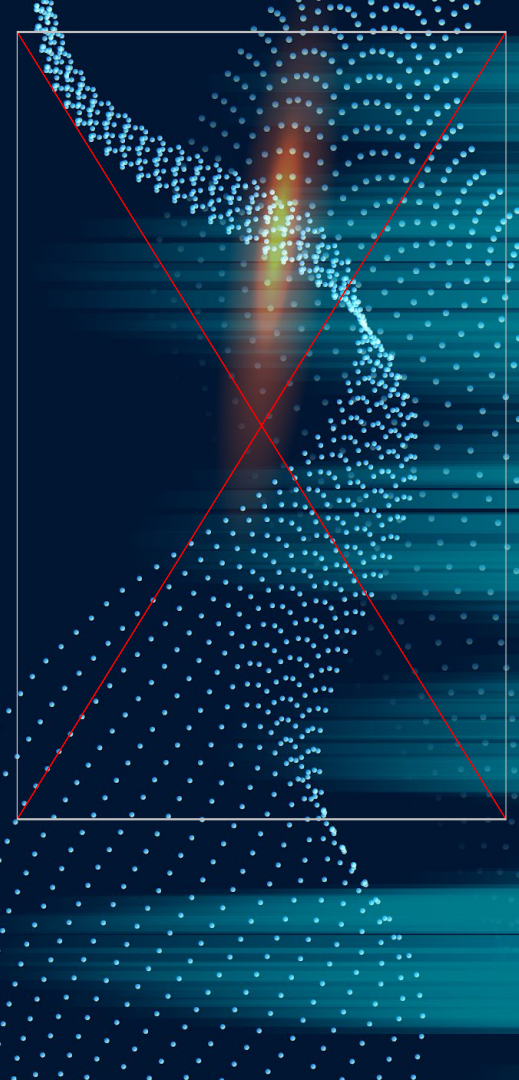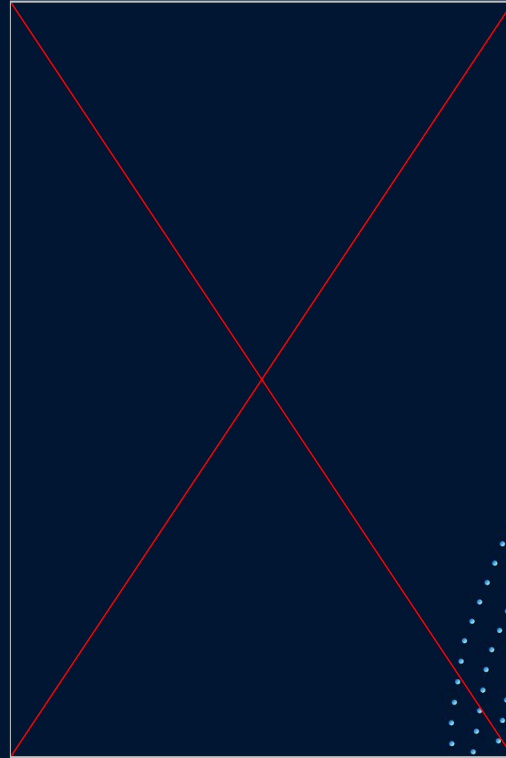
Three main parts we are prototyping

1. Scanner motion system
2. Sensor Housing
3. User interface

Scanner Motion System

- Physical build
- Ensure Scanner works properly
  - Frame
  - Gantry
- Fully assembled gantry system
  - X, Y, and Z directions
  - Stepper motors and belts
  - Manual movement
- Works Properly
- Future work
  - Implement electronic systems

Sensor Housing

- Building off of previous hardware

- Getting mounting location correct

- Getting fit for connectors corrected from 3D model

- 3D printing used for prototype and finished product
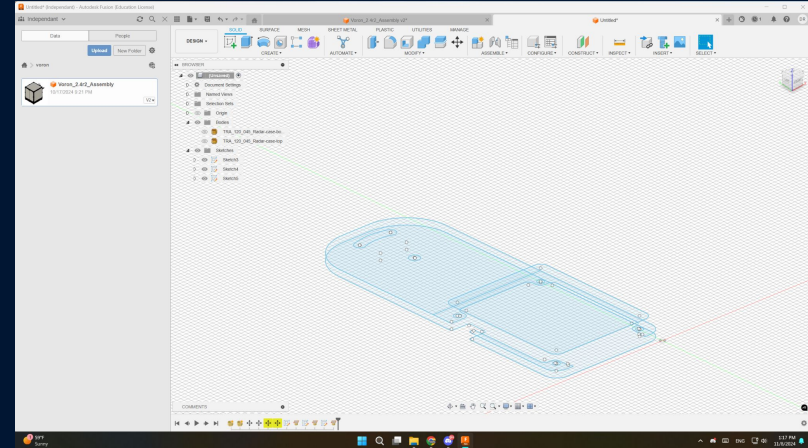
# 3D printing for rapid prototyping

Pros:	Cons:
Rapid iterations	Surface finish
Complex designs otherwise impossible	Material may not be strong enough in some cases
Reduced waste material in manufacturing	Imposes design constraints
Low cost	Limited build volume
Can construct very lightweight parts	

User Interface

Plans for prototyping

- Motion control
- Scan area
- Scan directions
- Scan initiation
- Scan results
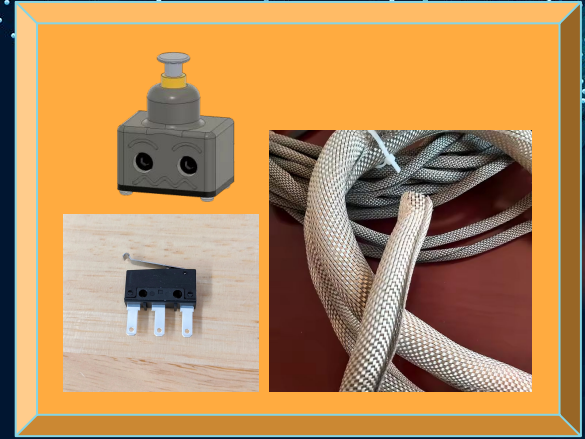- Homing the scan head
- Web-based
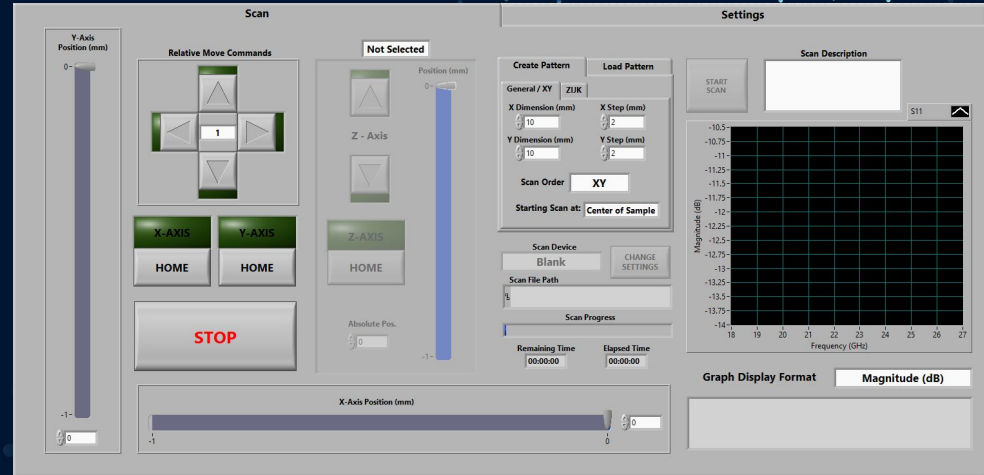
Implications and next steps

Scanner

- Additional z-stop with print head replacement for scanner homing
- Electronic parts and wiring

Mount

- Physical location insights
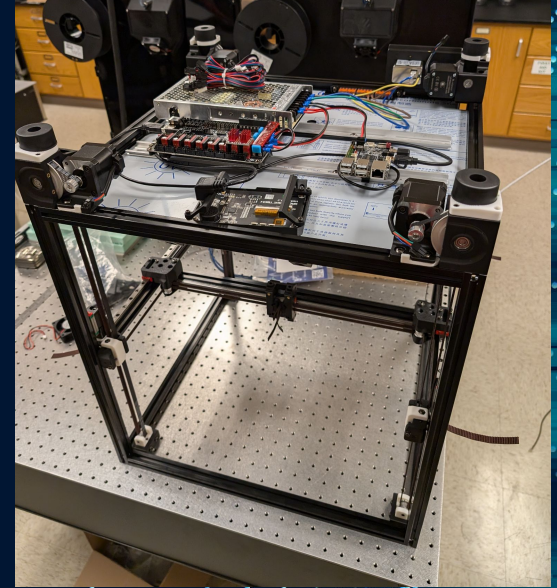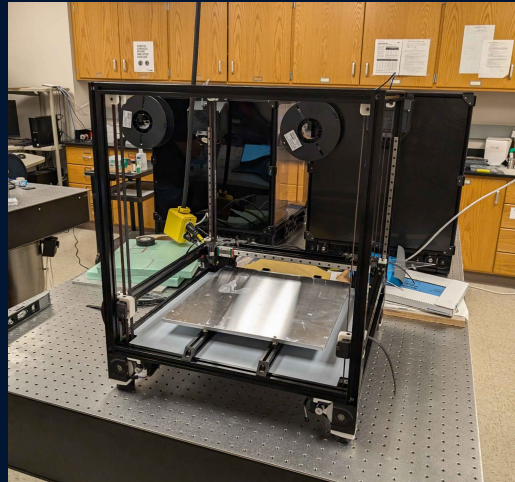- Mount screw distances

Conclusions

Entire project serves as a prototyping

Three main parts

1. Scanner motion system

2. Sensor Housing

3. User interface

Thank you