EGR101 SIM

- - - SPRINT 4 DEMO - - -

Emily Connearney, Luke Crump,
Vivian Dang, Daniel Khalil,
Keely Mashburn

Project Description

- An application that allows virtual bot design with:
  - component configuration
  - wiring layout
  - 3D simulation
- Packaged with an Arduino IDE.

Project Use

- Students couldn't do hands-on due to COVID-19.
- Cheaper alternative to buying an $85 kit.
- Fully emulates EGR101.

Assumptions/Dependencies

- Students are familiar with the kit and its components
- Students understand assigned task and what to do
- Only the professor can add additional components/pieces to the kit
- The application can run on different operating systems

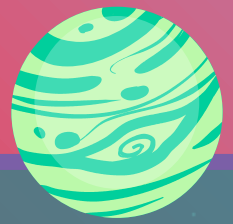
Constraints

- Project is constrained by the kit provided to the EGR 101 students
- Cannot have functionality or components that the actual robot and kit does not have

Fall Semester

- Wiring Interface
- Simulation Functionality
- Most Models Completed
- Arduino Interface

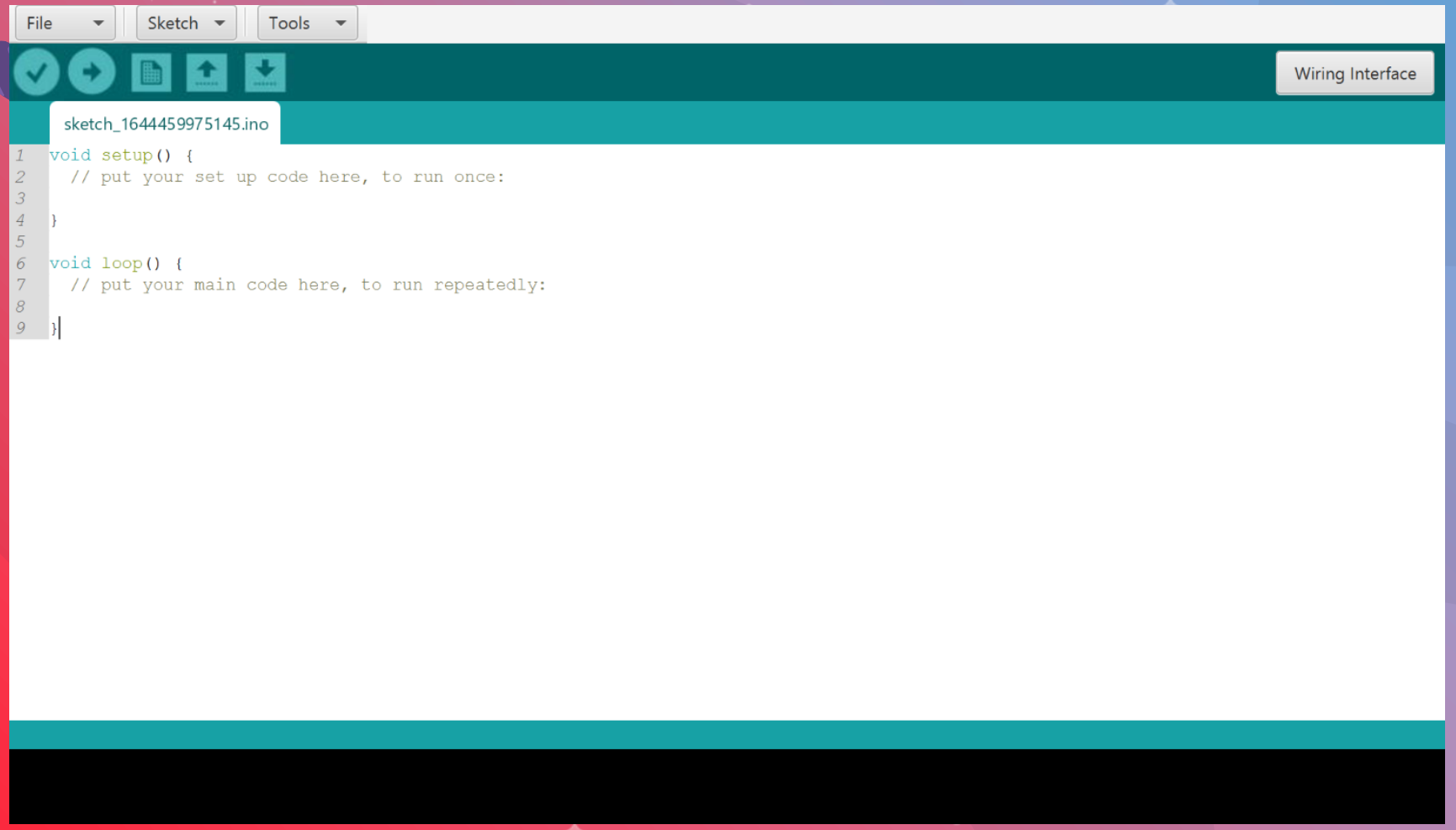
Major Sub-Systems



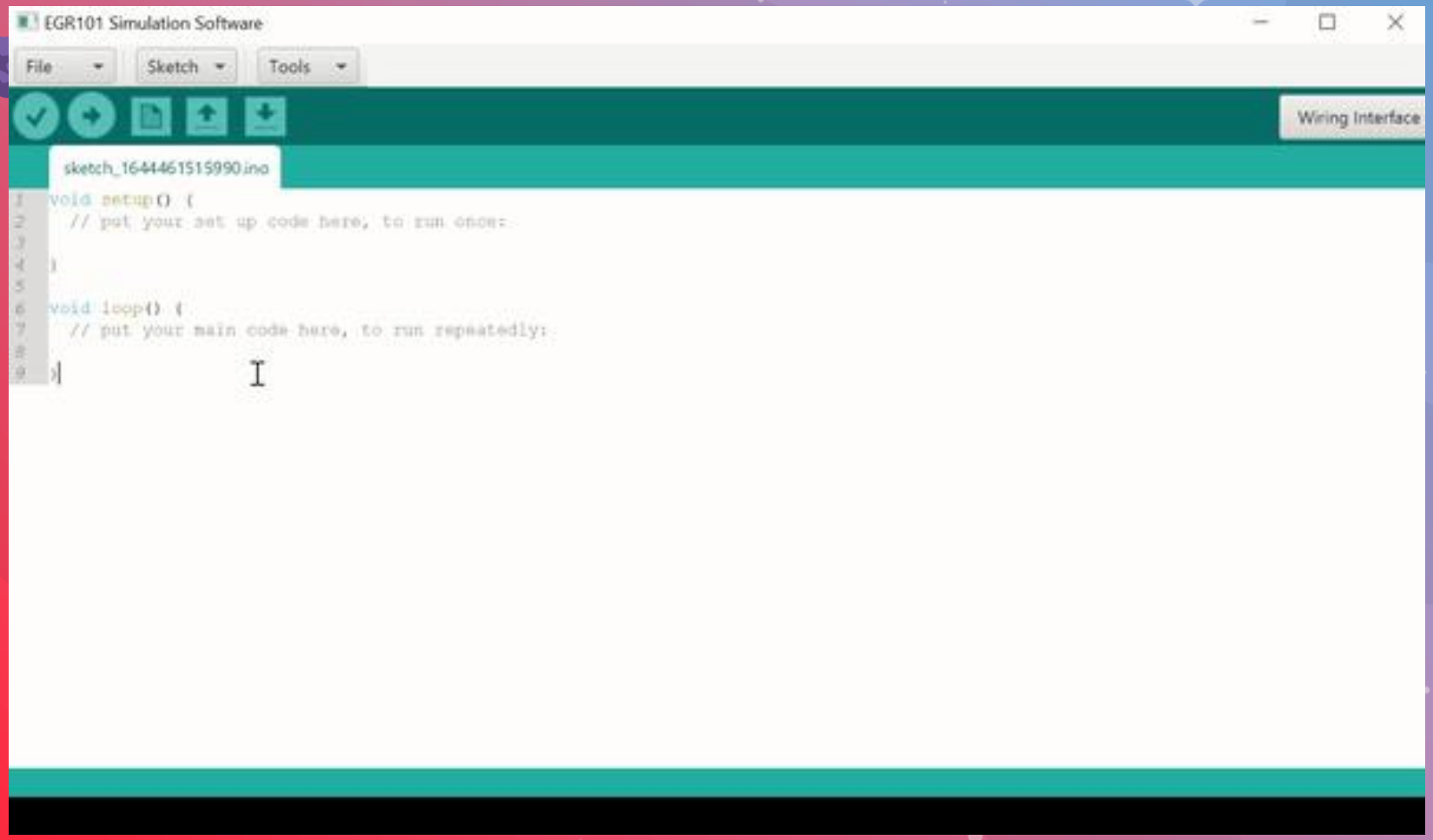
Design/Wiring Interface

Arduino IDE

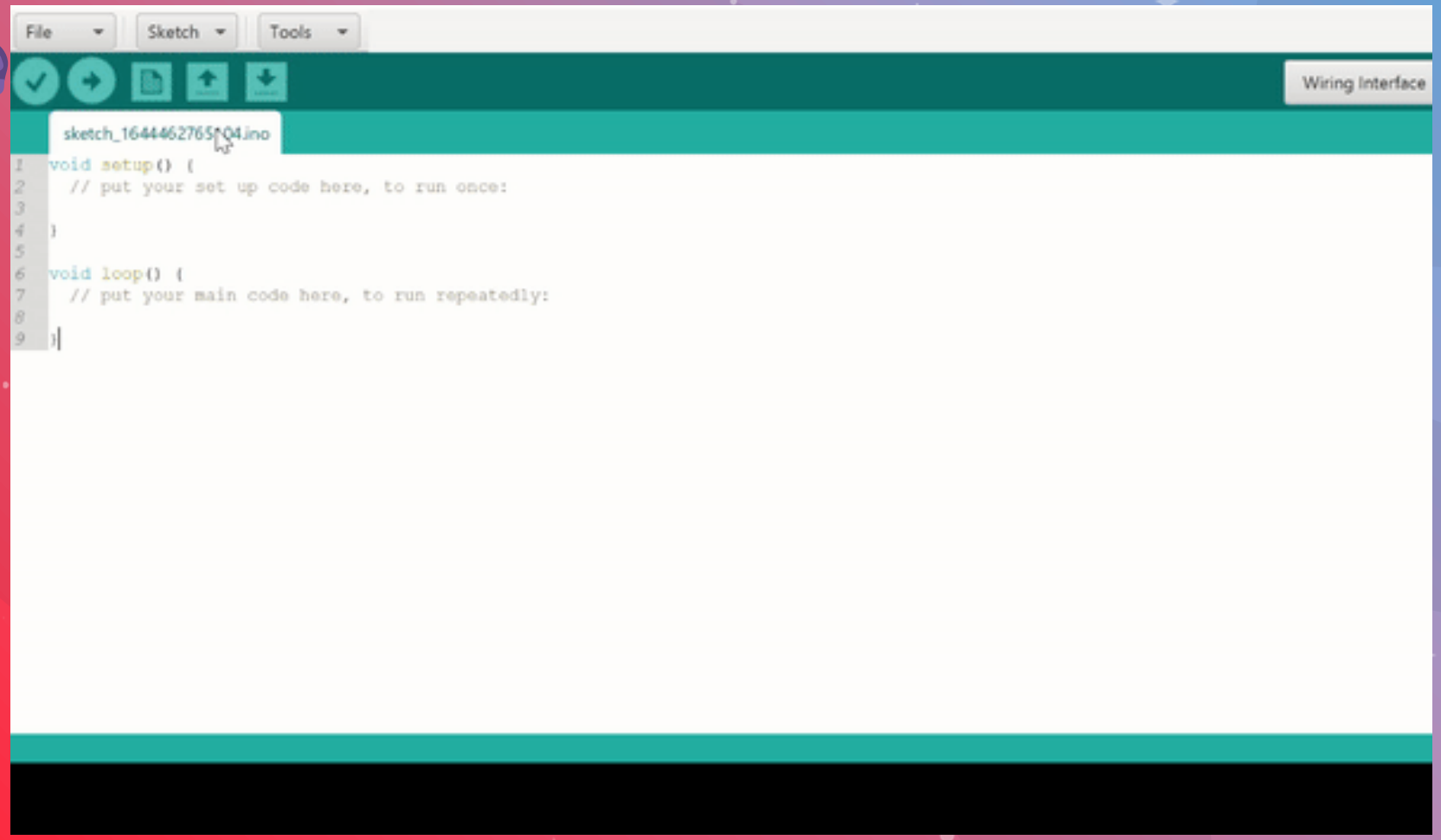
Arduino Emulation



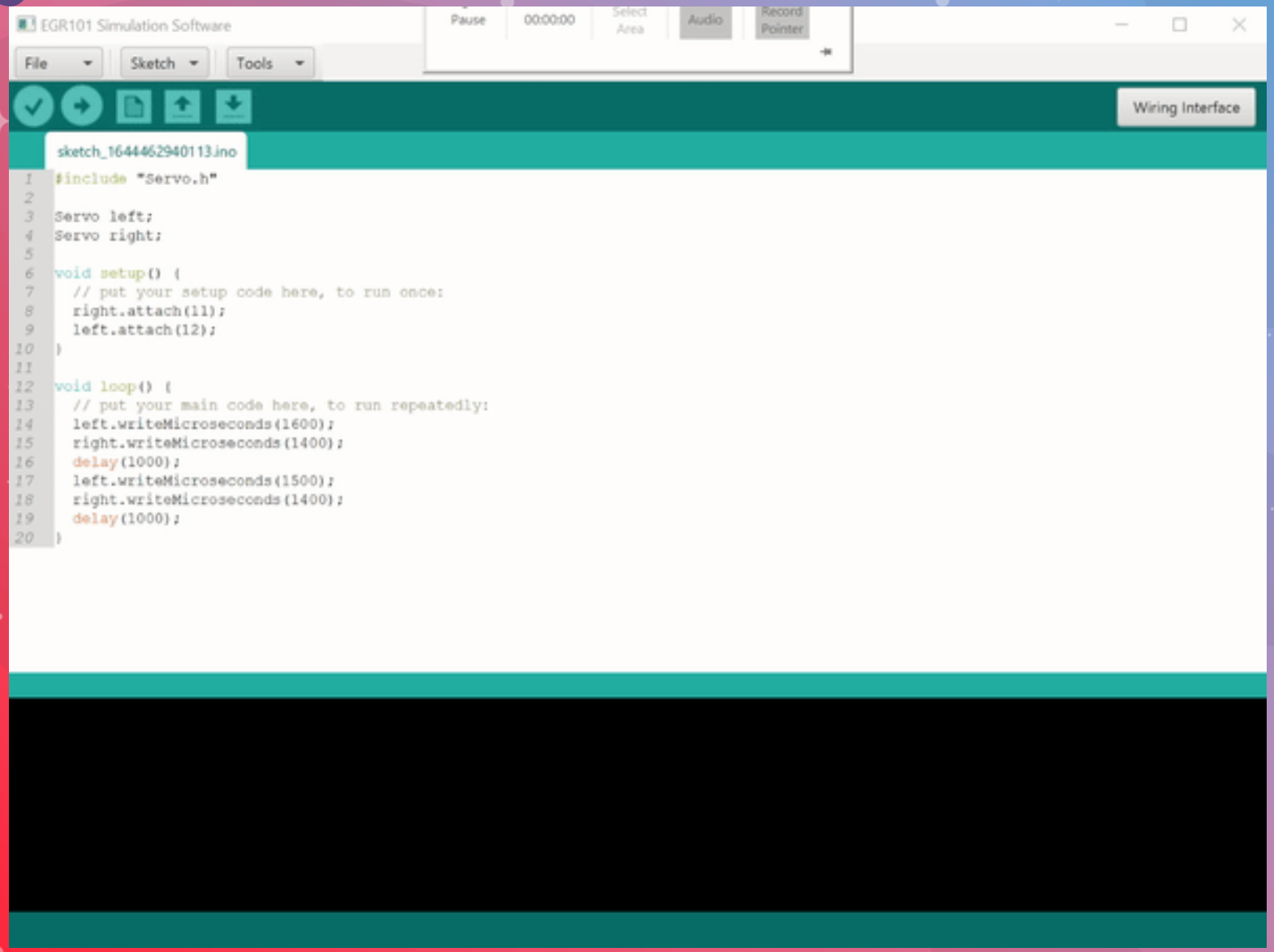
Arduino IDE Progress



Arduino IDE Progress



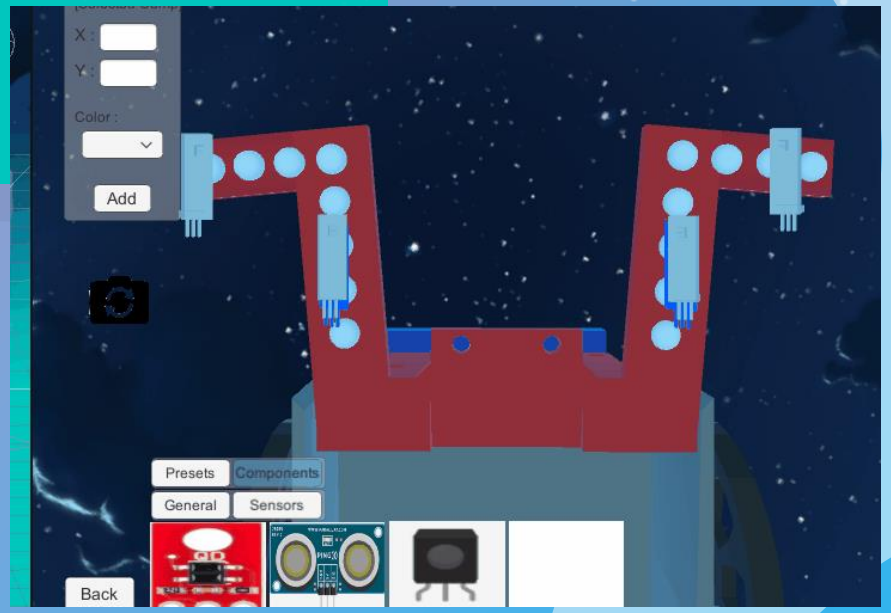
Arduino IDE Progress



Arduino IDE Progress

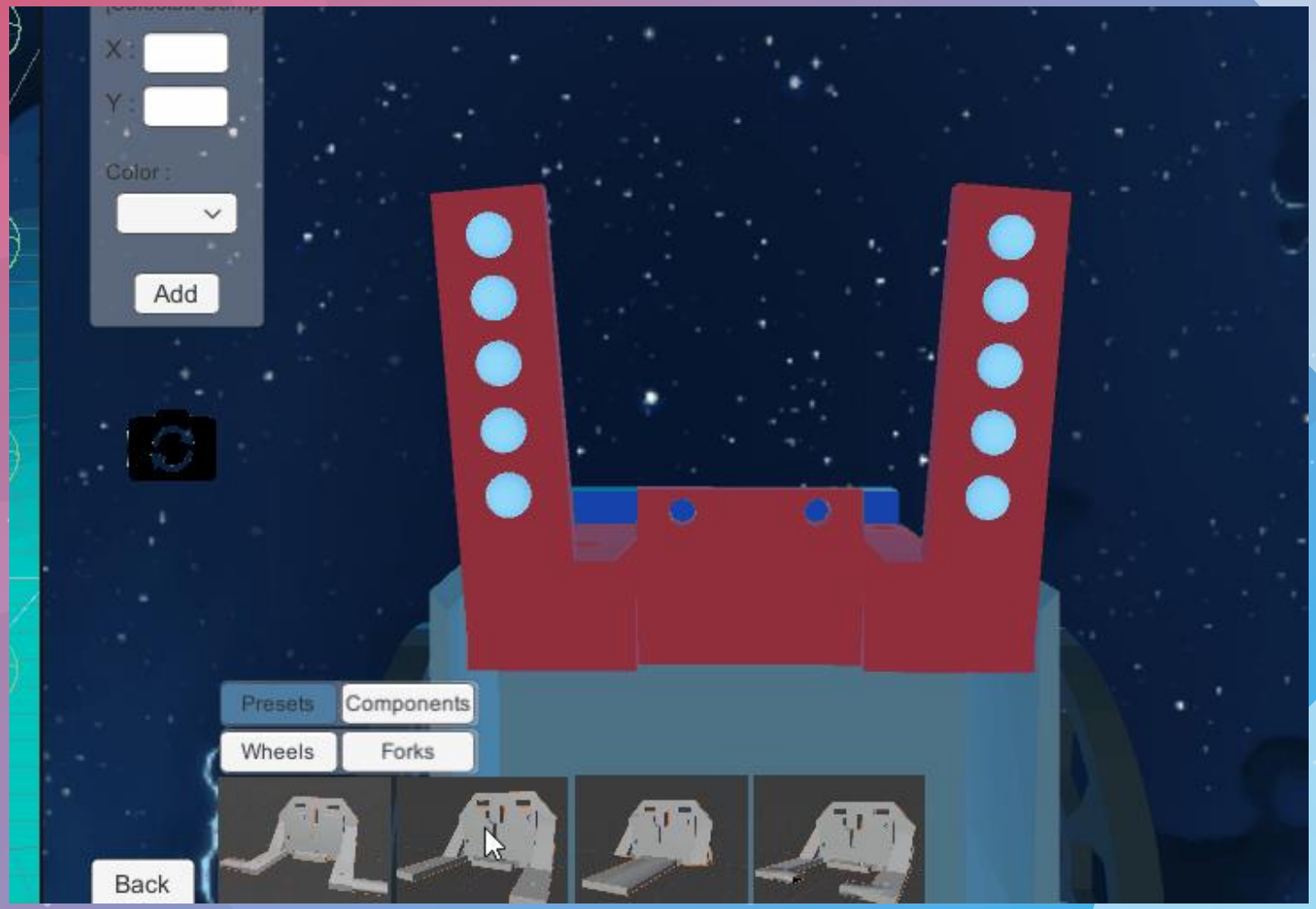
Bot Customization Menu

- create new components
- snap components
- select added components
- delete or modify position of added components



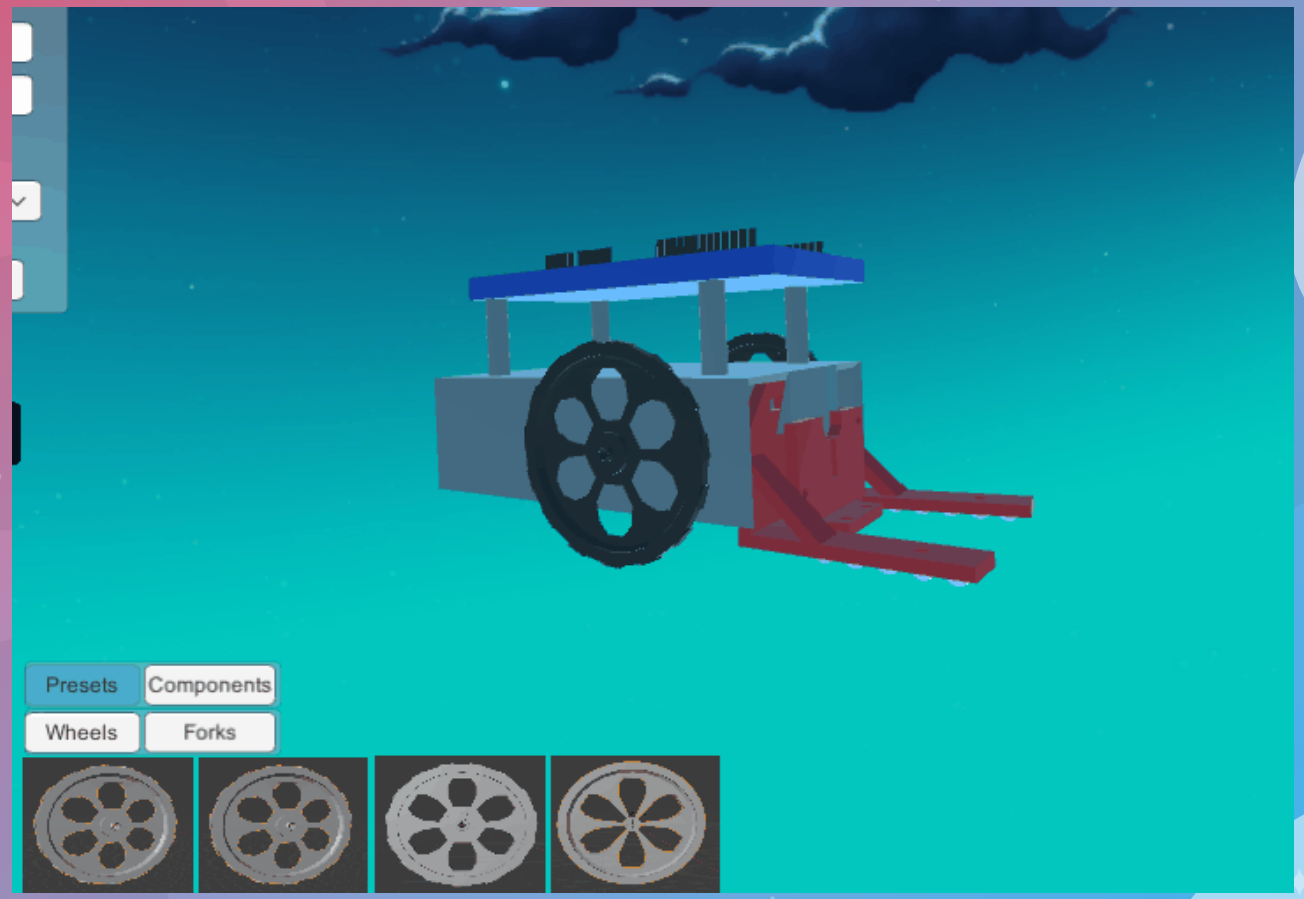
Bot Customization Menu

- Mount preset functionality with:
  - 4 different mount types
  - 4 IR sensor array configurations



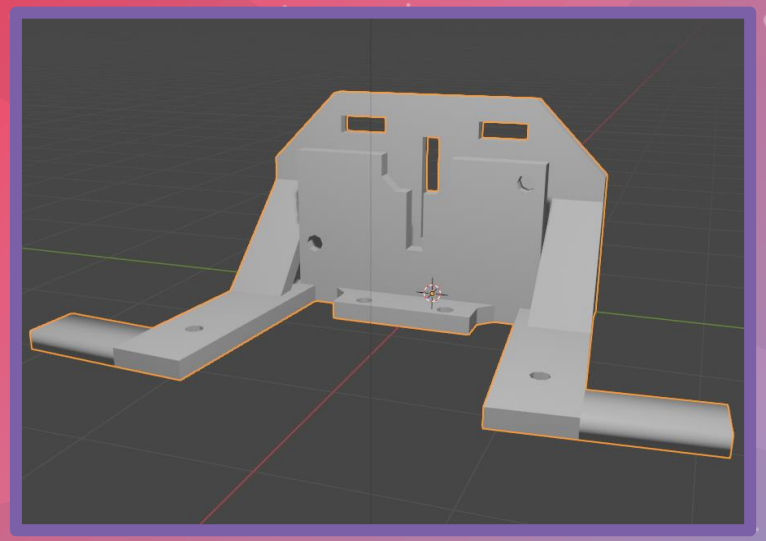
Bot Customization Menu

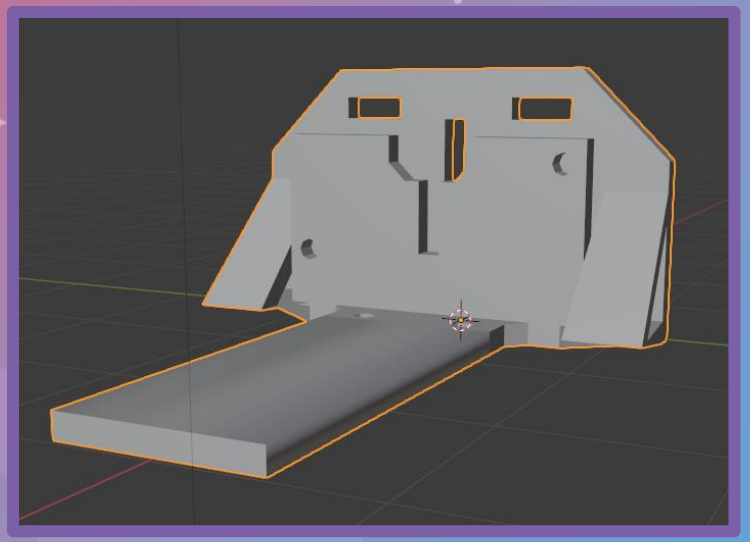
- 4 different wheel presets

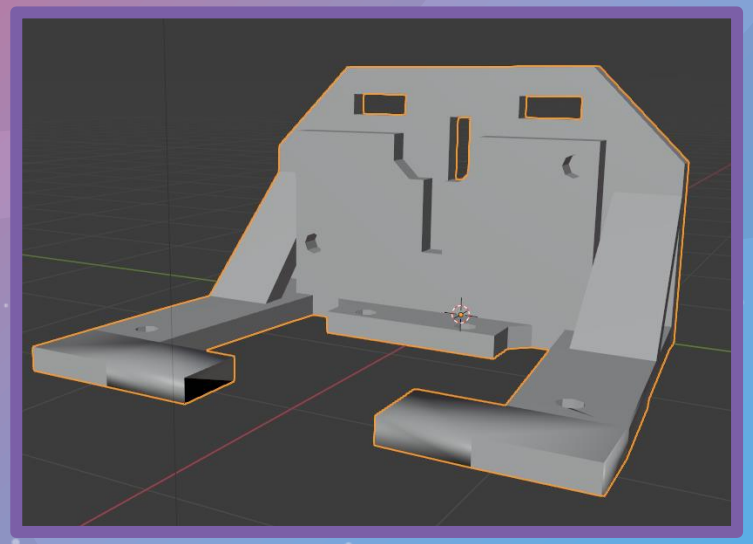


Bot Customization Menu

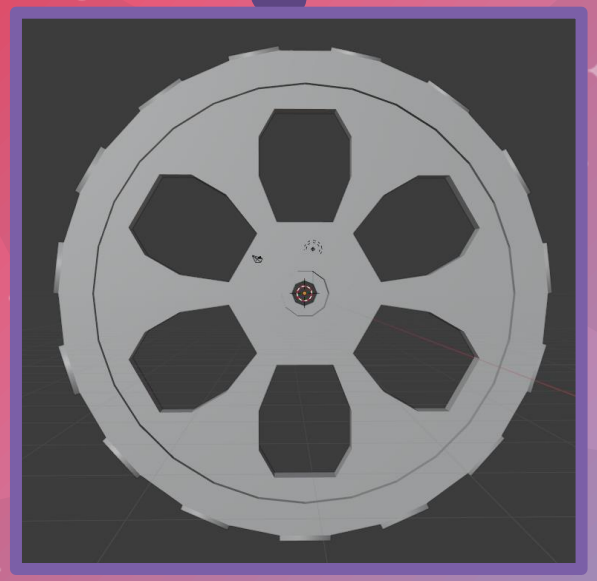
Models

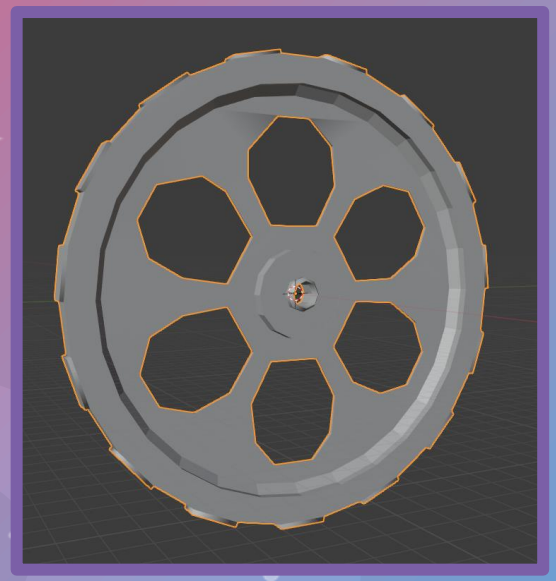


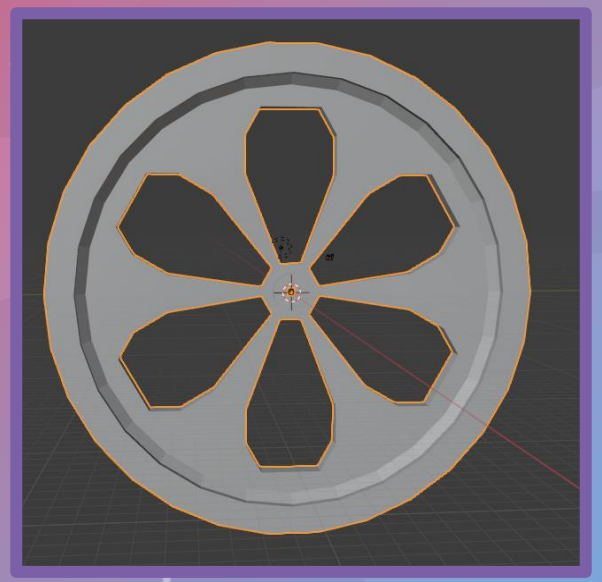


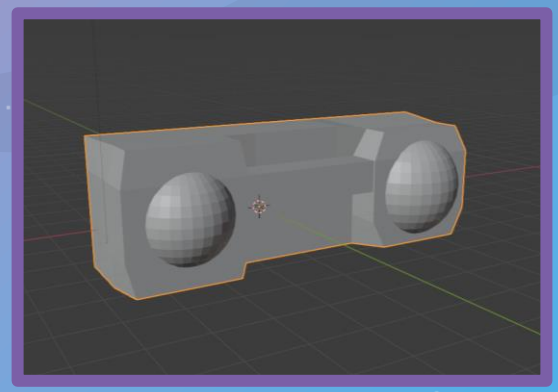


Models









Color Picker

- Changes colors of individual components

Bugs

- TCP/UDP
  - Fixed TCP bug by switching to UDP
- Wiring
  - Wirecast isn't touching pin
- Bug Document

Semester Timeline

SPRINT 4

- Bot customization functionality
- IDE styling and functionality improvements
- Completed more models

SPRINT 5

- Bot wiring functionality
- Bot simulation updates components from customization
- Improve the GUI

SPRINT 6

- Bug fixes
- Polishing

Lessons Learned

- Start work earlier
- Distribute more comprehensive tasks
- Communicate more
- Be more cautious when merging

THANK YOU!

Any questions?