F1/10 YELLOWTAILS

Autonomous Racing
For Everyone

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Clients: Dr. Nghiem, Doan Nguyen

Introduction

Clients

Dr. Nghiem

- Assistant Professor
- Director of ICONS Lab

Doan Nguyen

- Graduate Research Assistant

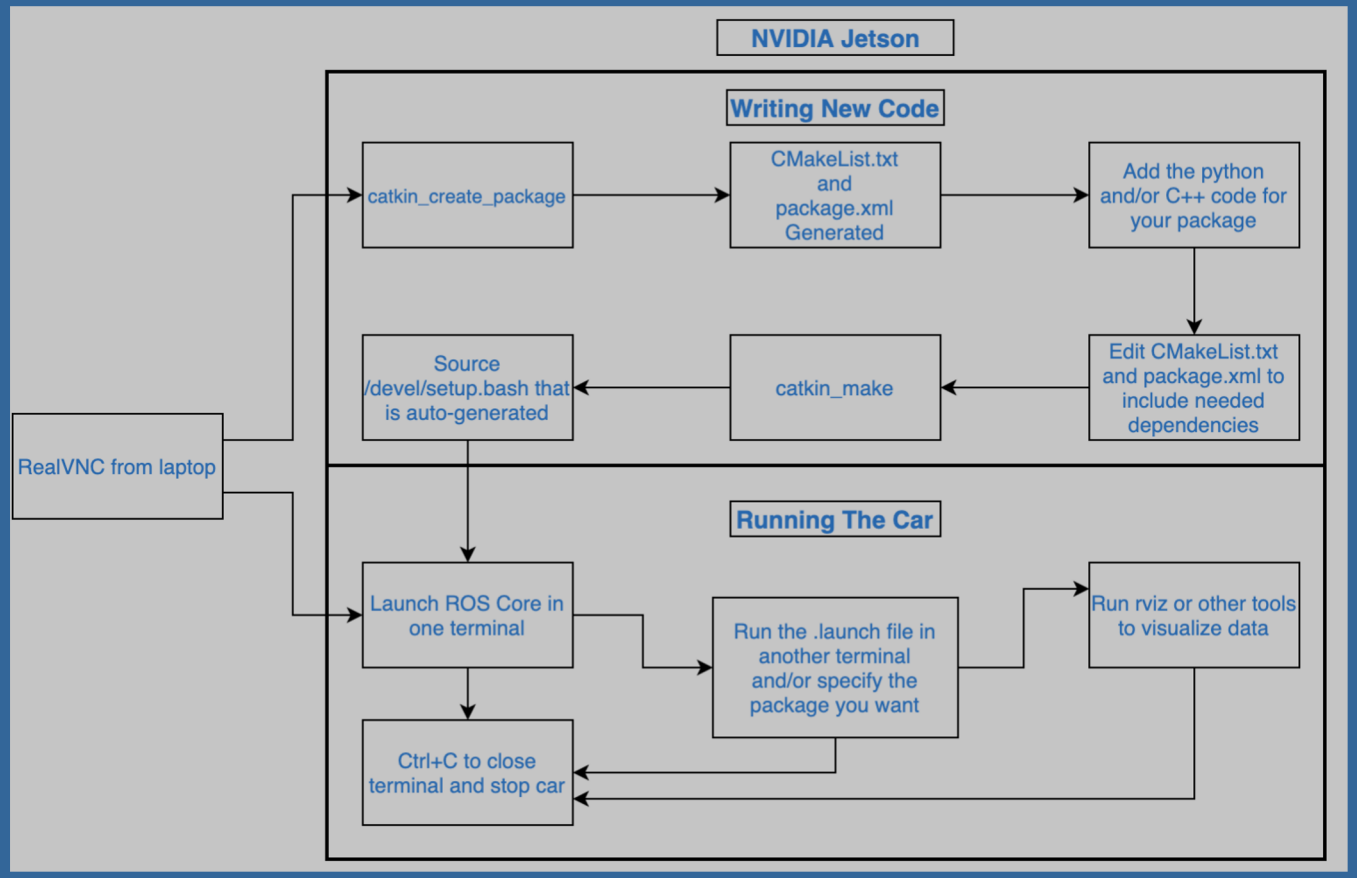
What makes these cars run?

- NVIDIA Jetson / LiDar
- Robotic Operating System (ROS)

Clients Goals

- Flagstaff's F1/10 Robo-Racing Project

Problem Statement



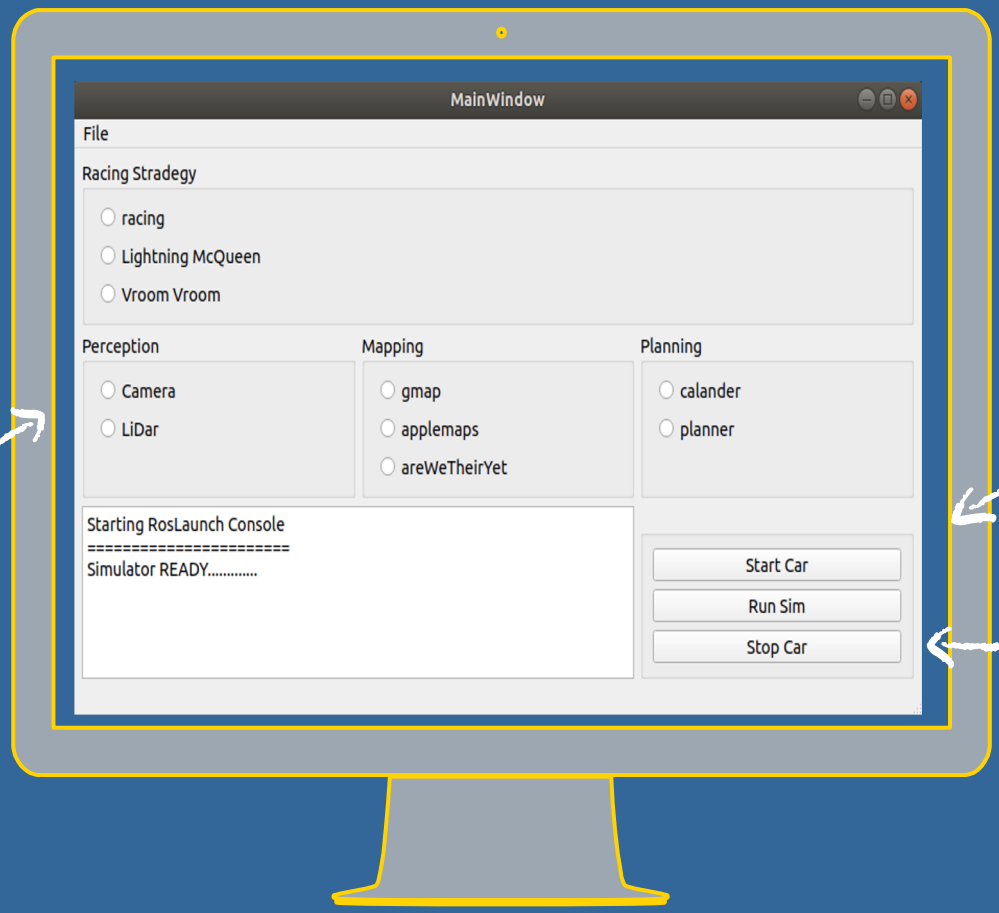
1. Overly Complicated

2. Disconnected Configuration

3. No emergency Stop

Solutions Overview

An Interactable System For High School Students!



1. Driver System

2. Configuration Window

3. Kill Switch System

Key Requirements

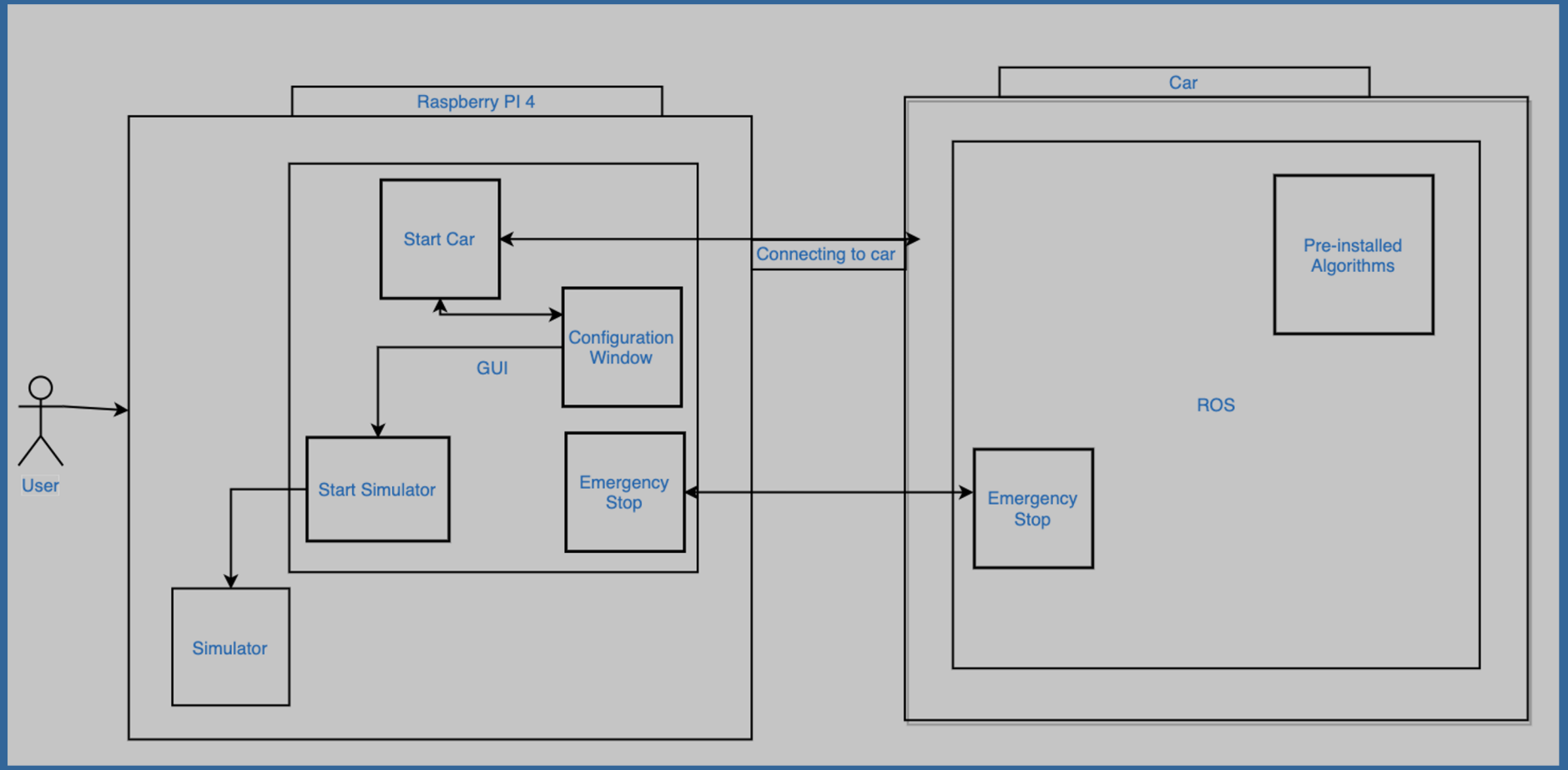
Functional

- Configuration System
- Communication Tool Kit
- Console
- Emergency Stop Button

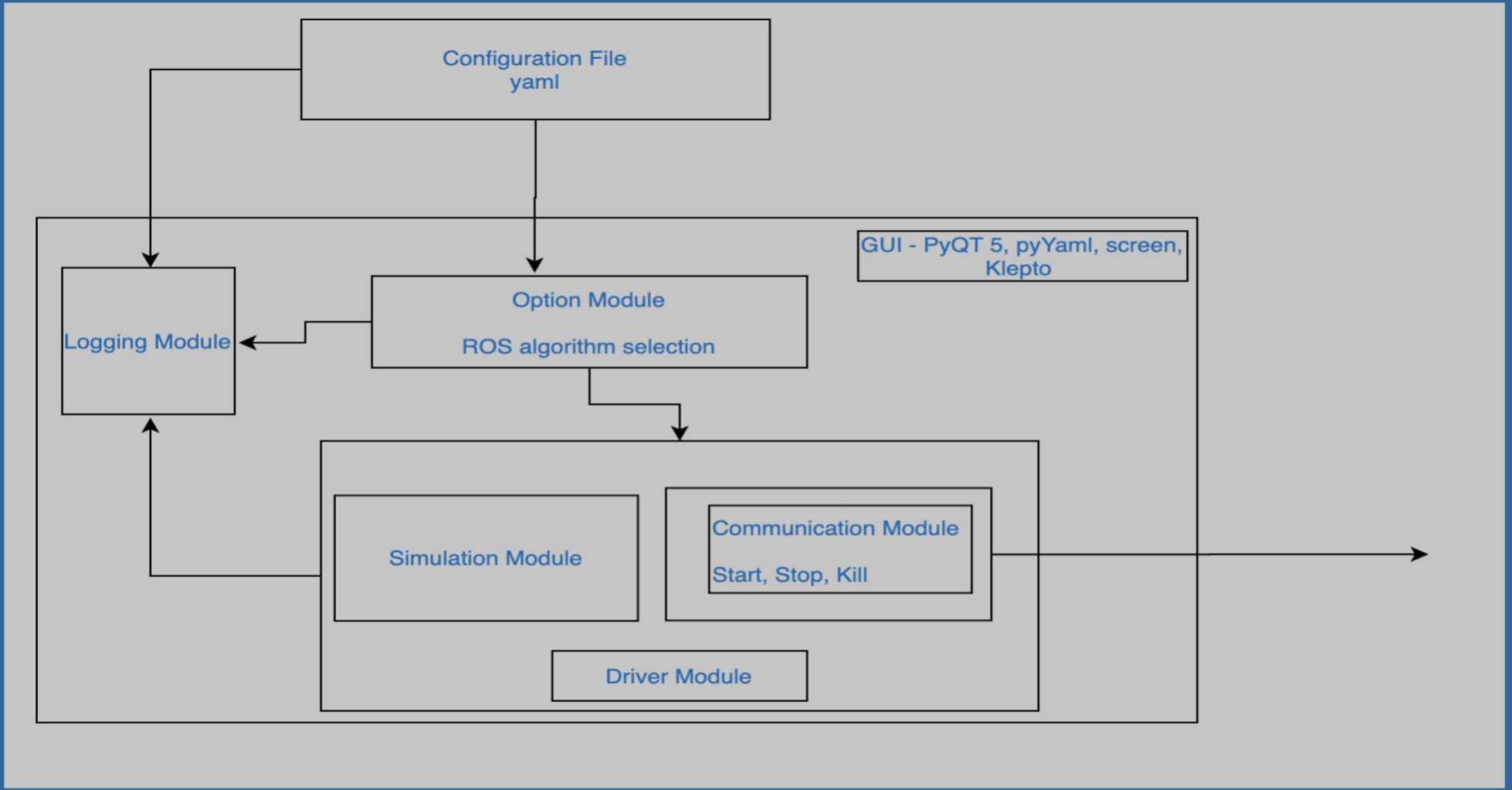
Environmental

- ROS
- Ubuntu
- NVIDIA Jetson
- Raspberry Pi

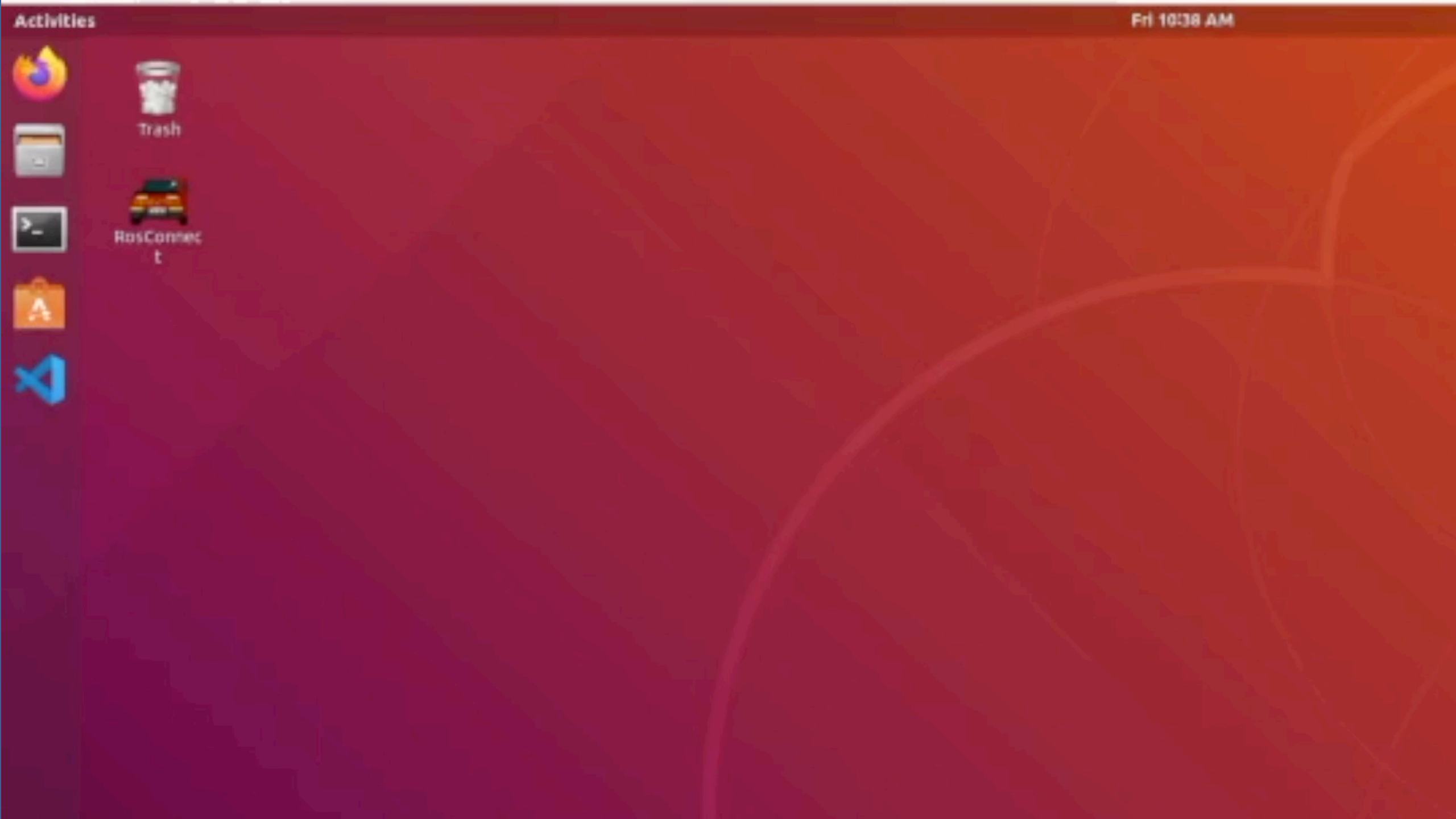
Implementation Overview



Architectural Software Overview



Prototype Review


Activities
Fri 10:38 AM
Trash
RosConnec
t

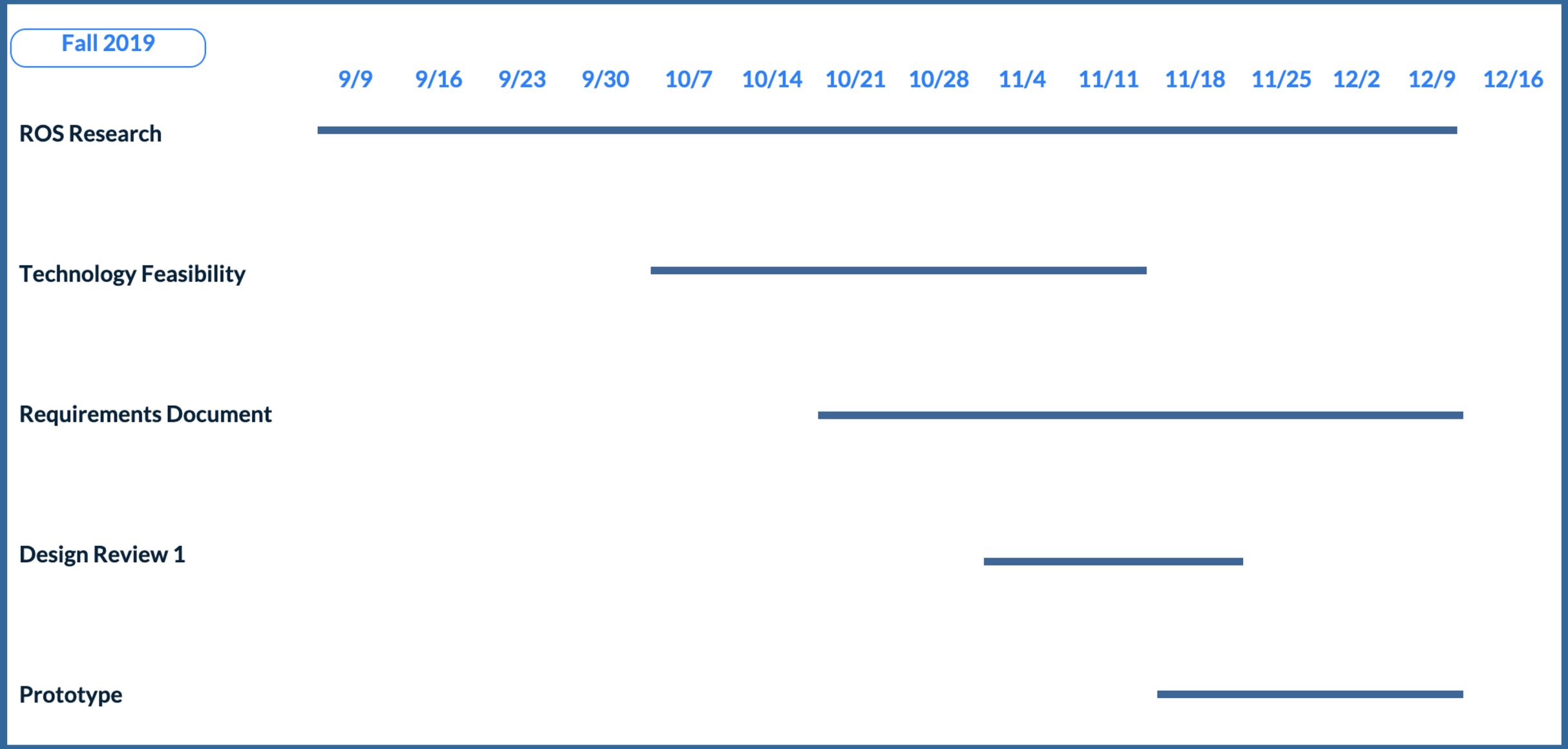
Challenges and Resolutions

1. *Online Communications*
    - Since the switch to go online we no longer have great interaction as a team and with clients.

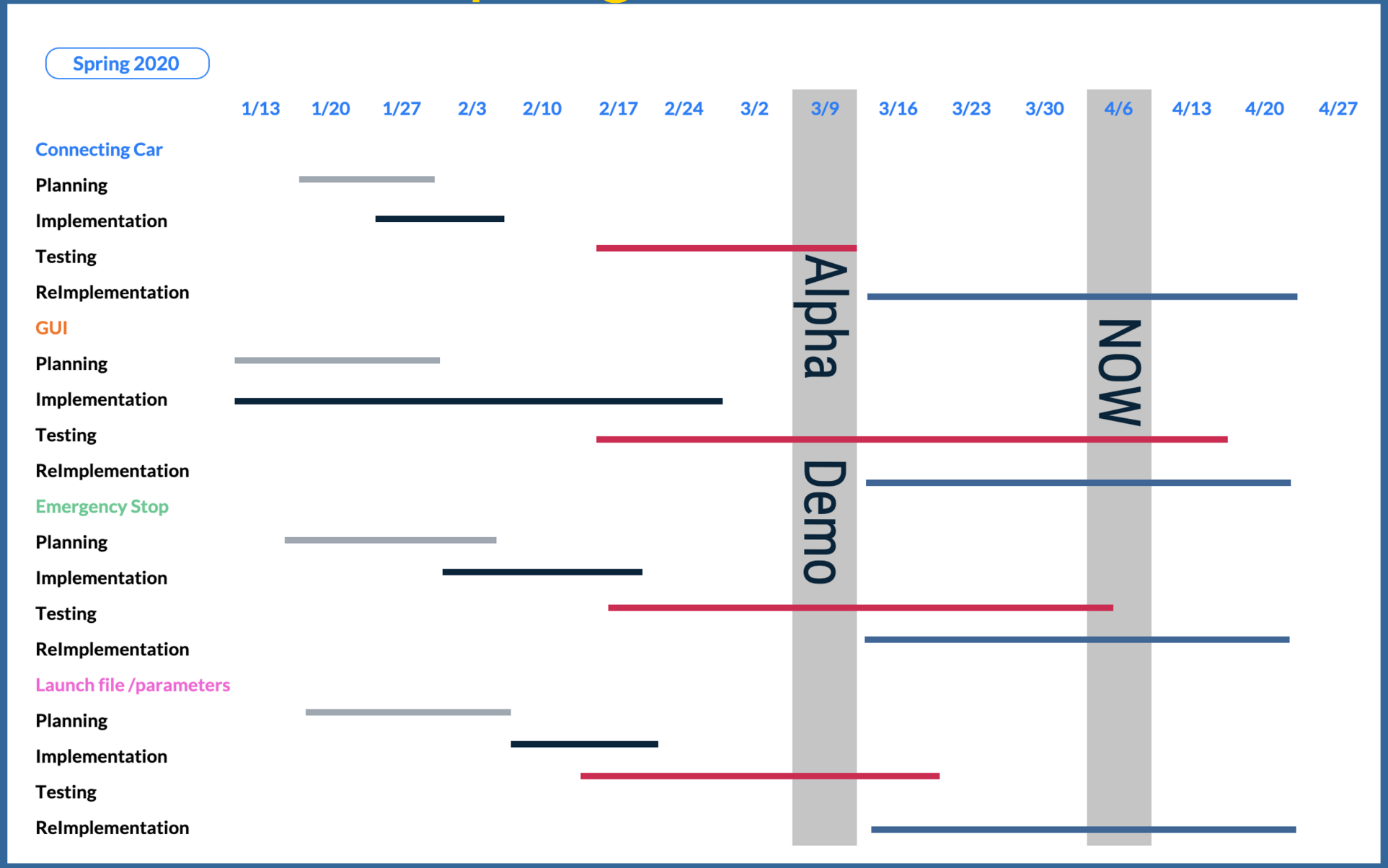
2. *Saving Configuration Data*
    - Using Save button in file

3. *Using SSH to communicate and control car*:
    - Bash screen command

Fall Schedule



Spring Schedule



Testing Plan

Unit Testing

- Make sure to validate all methods work like they are supposed to.

Integration Testing

- Test to make sure that all methods work together.

Usability Testing

- Have EE 499 Class go through and use our GUI to see how usable it is.

Conclusion

Big Picture

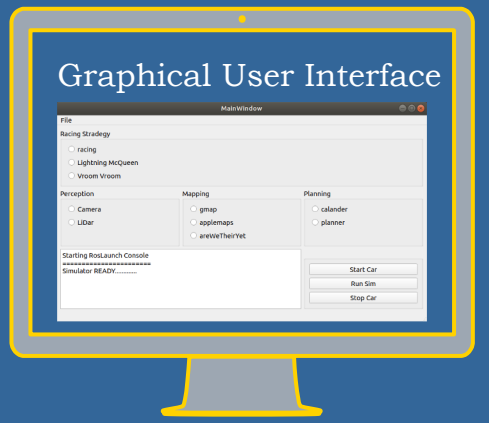
- Self-driving cars are the future!

Problem

- Autonomous F1/10 program is currently inaccessible to HS students

Solution

- Graphical User Interface for Better Accessibility



Thank you!

For more information please visit our website at the following QR code: