MICHIGAN STATE UNIVERSITY

Project Plan Presentation

Test Platforms for Self-Driving Race Cars

The Capstone Experience

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From Students…
…to Professionals

Project Sponsor Overview

- Indy Autonomous Challenge
- PoliMOVE-MSU
- Professor Siegel and Professor Dahal

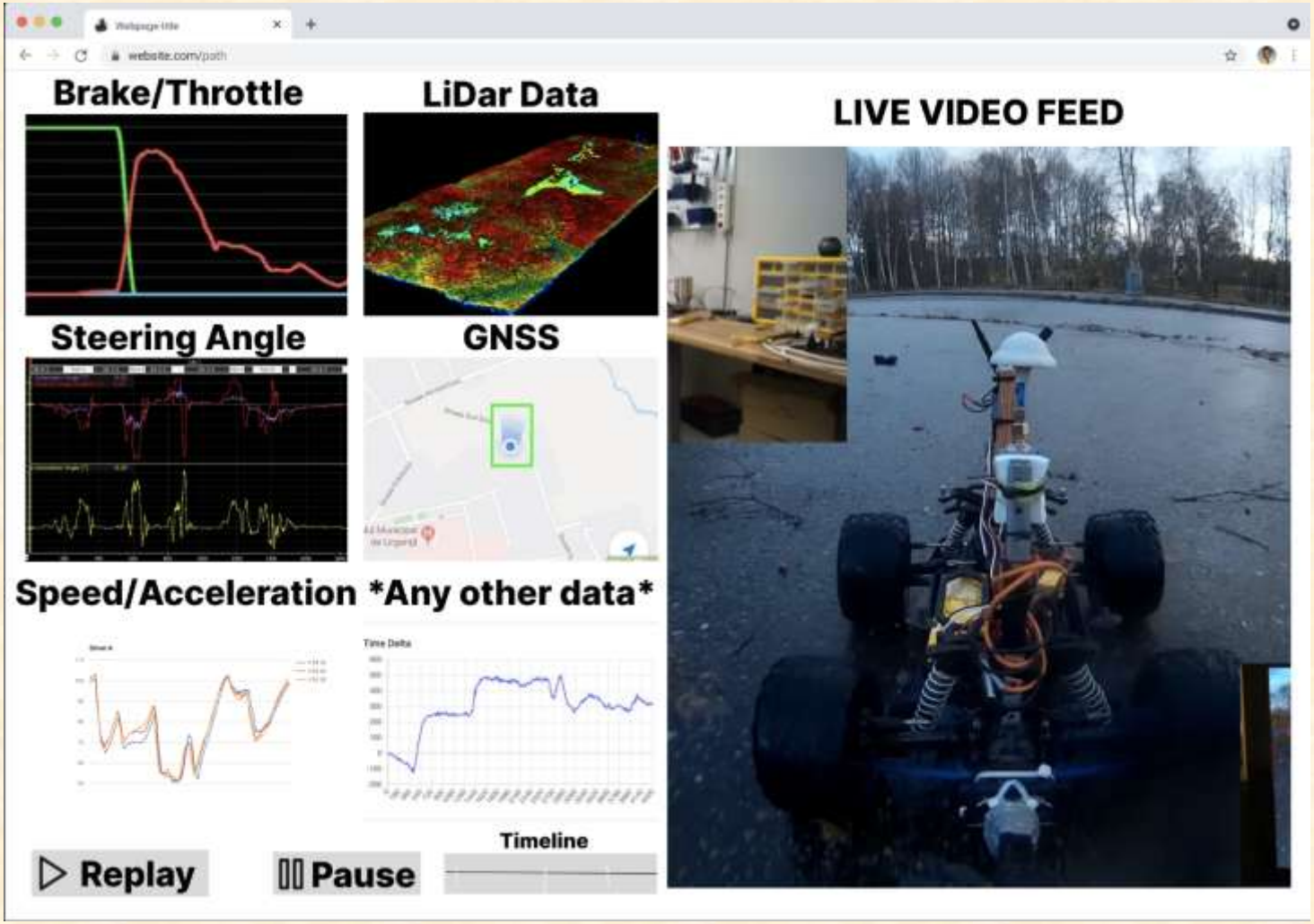
Project Functional Specifications

- Improve data collection
- Visualize data from a test car
- On a web application

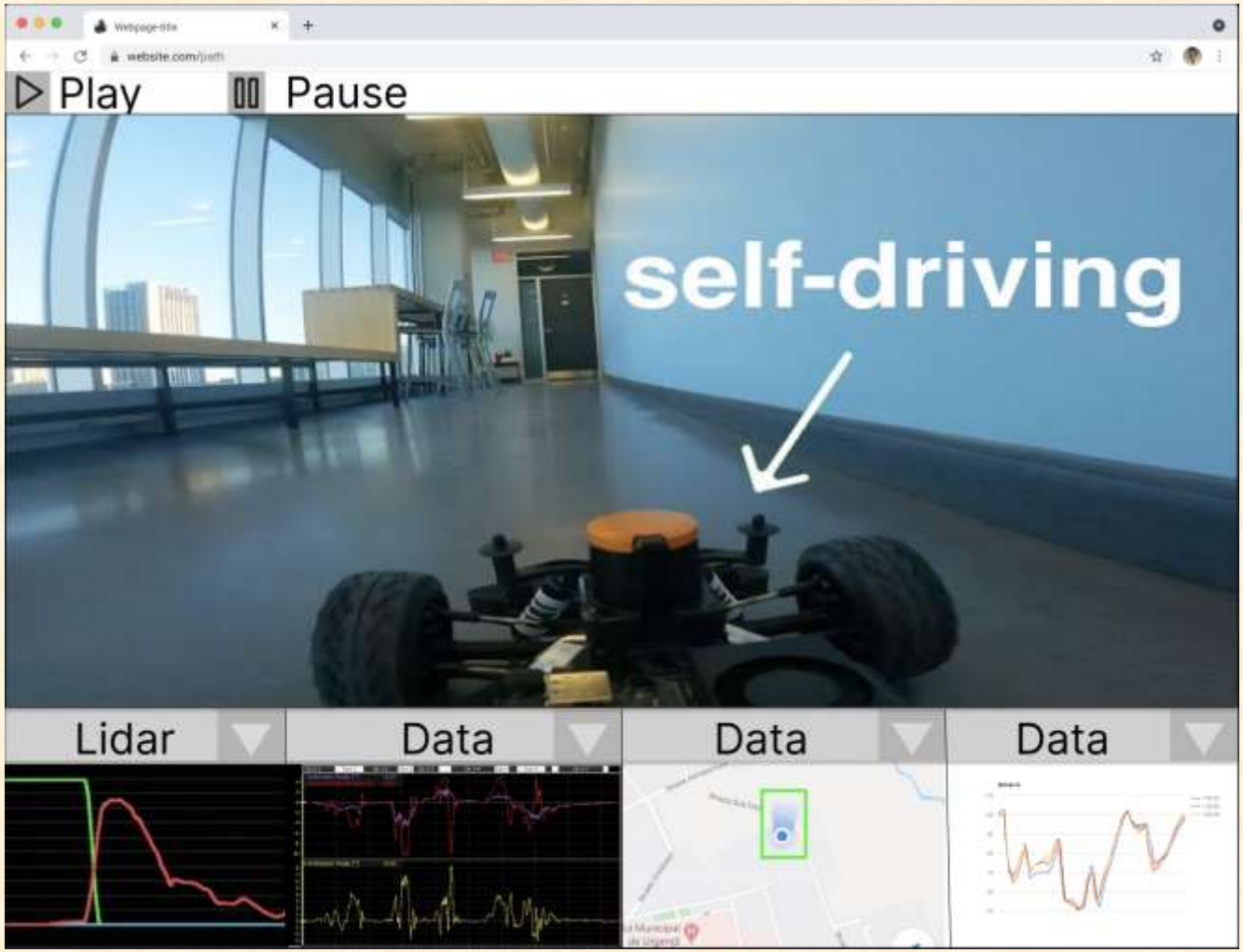
Project Design Specifications

- Remotely operate a vehicle
- Display live readout of data
- Integrate with hardware

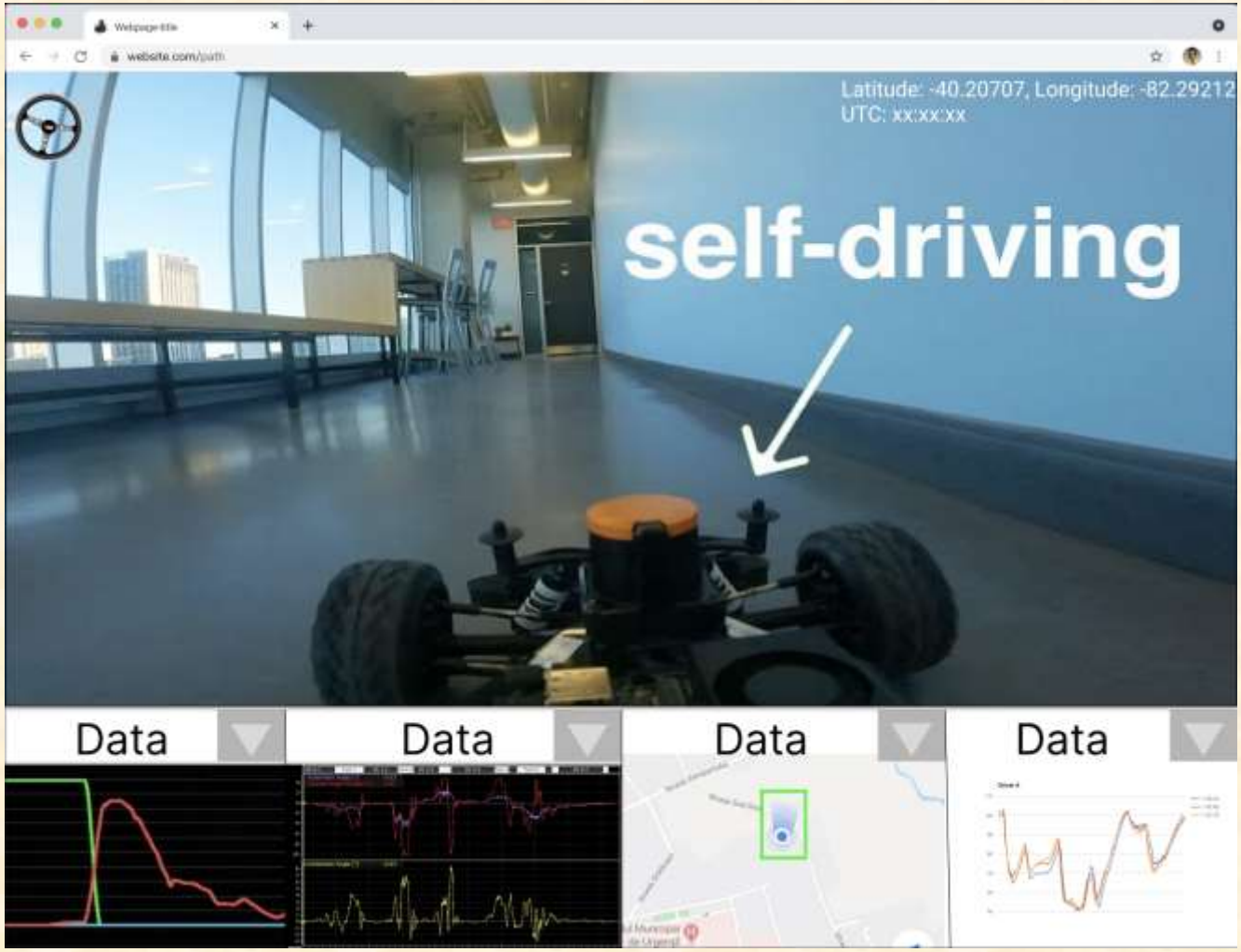
Screen Mockup: Data-focused



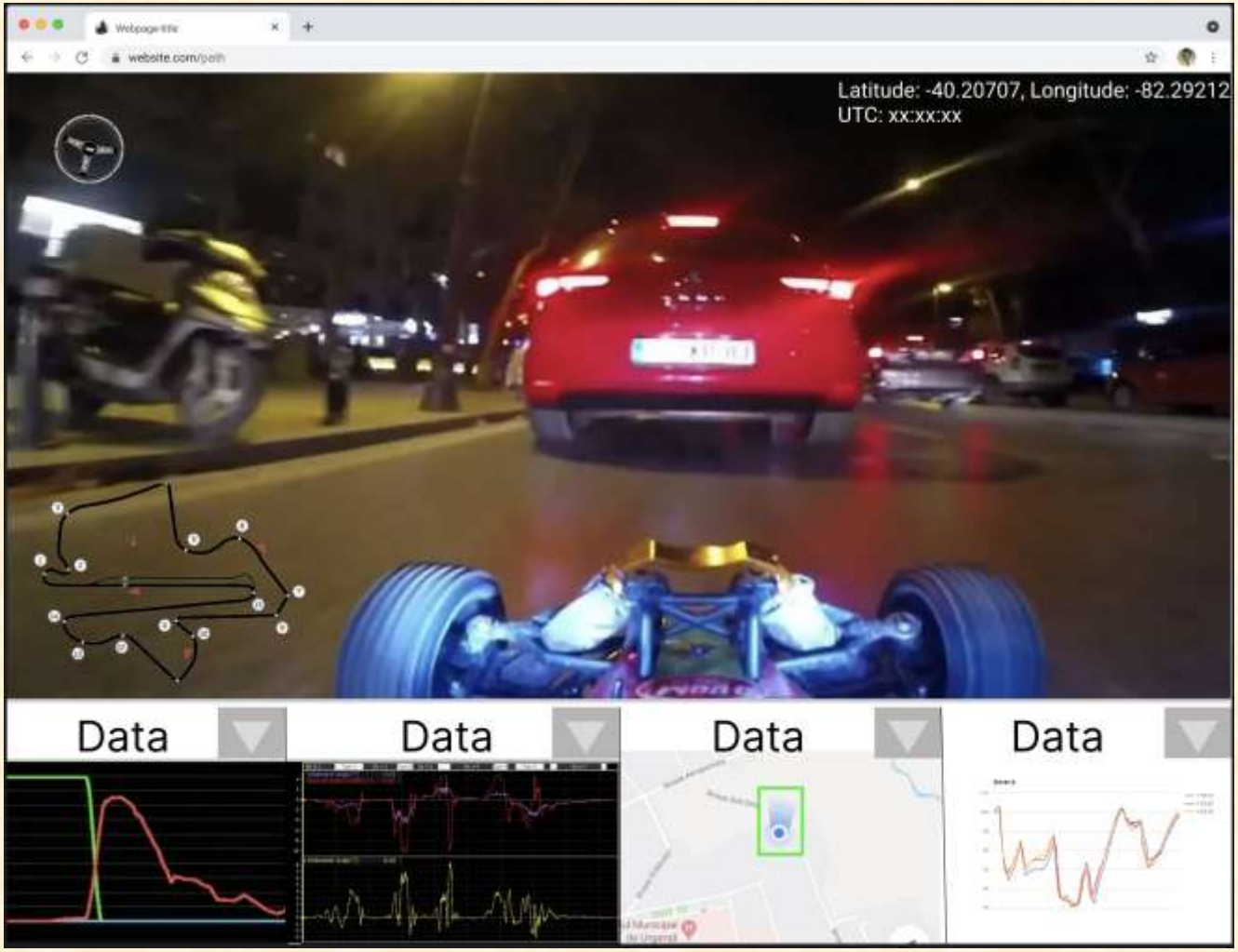
Screen Mockup: Camera-focused



Screen Mockup: More metrics



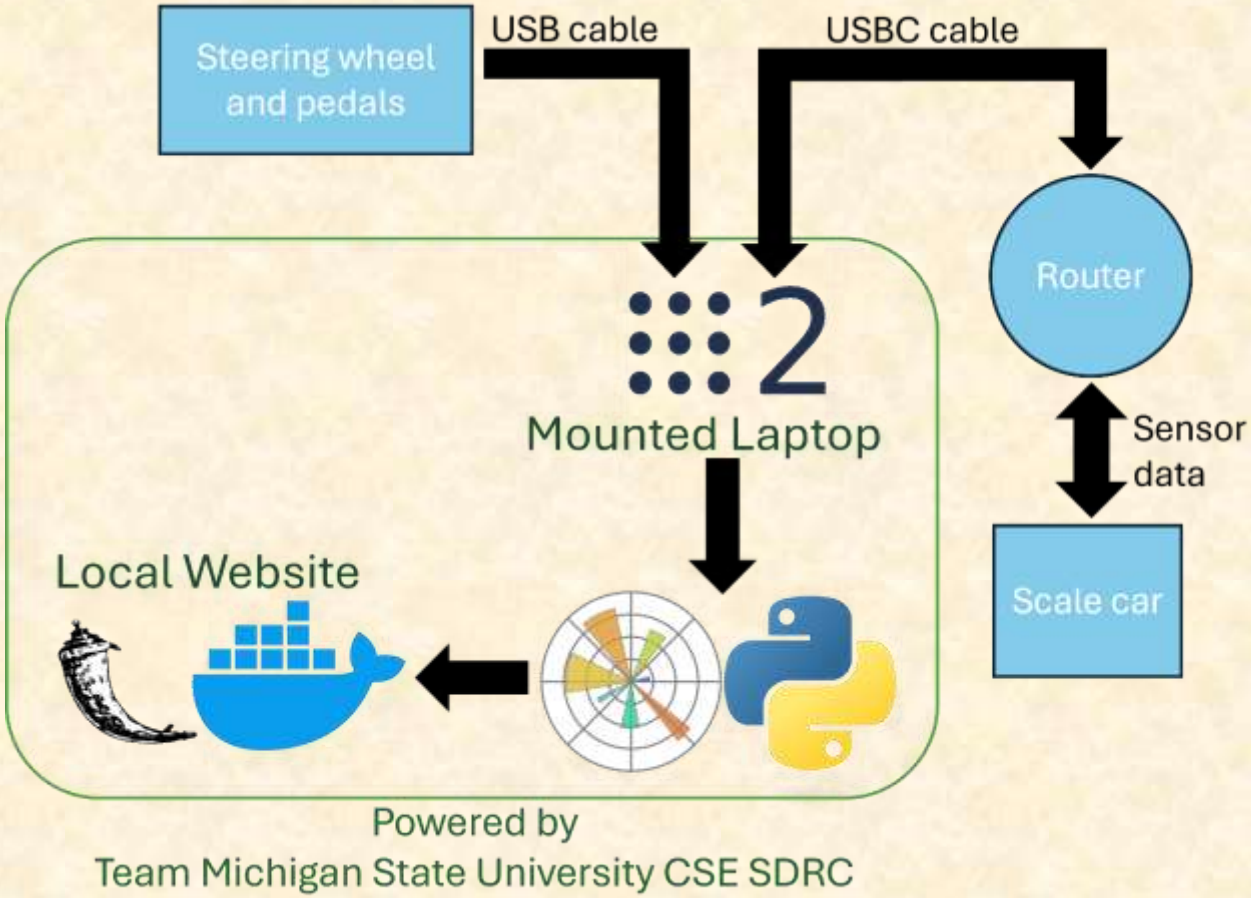
Screen Mockup: With lidar map



Project Technical Specifications

- ROS2
- Linux/Ubuntu
- Python with
- Flask
- Hardware integration
  - Router
  - GNSS
  - Lidar
  - Internal Measurement Unit
  - Webcam
  - Pedals
  - Steering wheel

Project System Architecture



Project System Components

- Hardware Platforms
  - 1/10th scale car
  - Wheel and pedals
  - Mounted laptop
  - Router
- Software Platforms / Technologies
  - Linux/Ubuntu
  - Docker
  - Python
  - HTML

Project Risks

- Risk 1
  - Maintaining Connection with router
  - Test router range
- Risk 2
  - Transfer of data from router
  - Prototype programs to transfer mock data
- Risk 3
  - Connecting sensors to ROS2
  - Research and follow ROS tutorials
- Risk 4
  - Using the provided hardware for controls
  - Research software communication for the provided hardware

Questions?