

MICHIGAN STATE
UNIVERSITY

Alpha Presentation

Remote Interface for Small-Scale
Autonomous Racecars

The Capstone Experience

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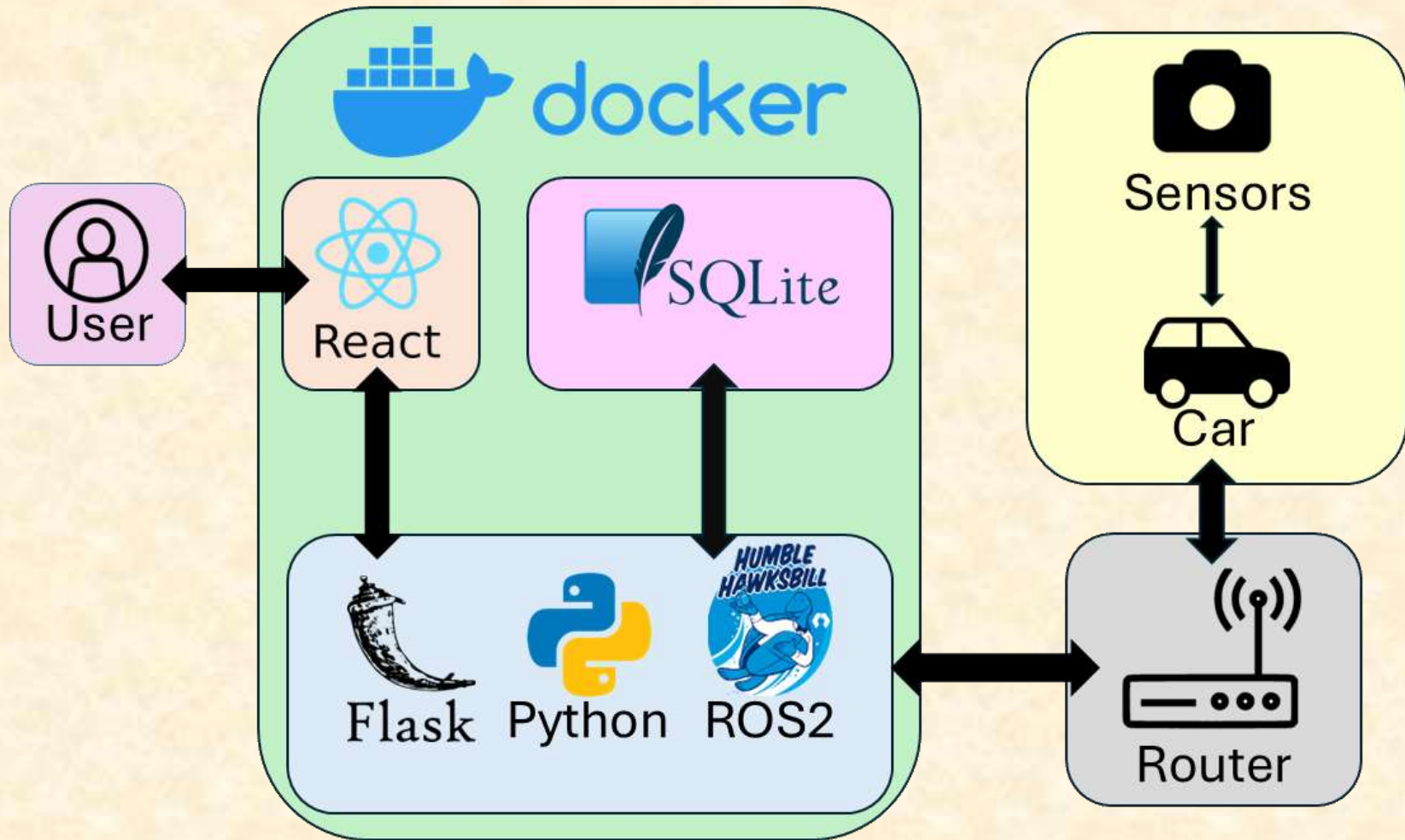
From Students...
...to Professionals

Project Overview

- PoliMOVE-MSU team
- Indy Autonomous Challenge (need this?)
- Small-scale testing to reduce financial risk
- Needs to be used by both researchers and kids
- Improve and simplify user interface
- Create 2 screens: simple and advanced
- Add touchscreen driving for easy use
- Add ability to drive two cars at once



System Architecture



Advanced View

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ROS Disconnected Test

Layout: Export Import Reset Change

Two Car View Simple View **Advanced View**

Live Feed

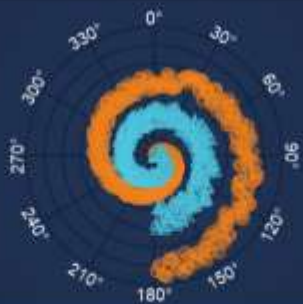
Live Camera Feed Frames: 5006 FPS: 7



REC  

LiDAR

☒ Circle Series
☒ Triangular Series



SCICHART

Online Map

Lat: 42.7251 Lon: -84.4791 Relocate Follow Car



Leaflet | © OpenStreetMap contributors

Offline Map

Select Offline Map

Random	16 tiles	Delete
dc	16 tiles	Delete
detroit	16 tiles	Delete
indy 500	16 tiles	Delete
msu	16 tiles	Delete



Simple View

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Connecting (3)

Two Car View Simple View **Advanced View**

Live Feed

Live Camera Feed Frames: 100 FPS: 13



Map

Lat: Lon:



Vehicle Stats

Speed: 25.1 mph

Brake: 

Throttle: 

Joystick



Network Stats

Latency: 20 ms

RTT: 40 ms

Packet Loss: 1%

Last Seen Direction: East

Last Seen at: 42 ms

Queue Size: -3 ms



Two-Car View

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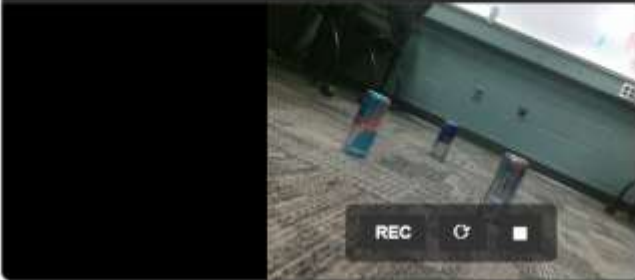
Connecting (3) Test

Two Car View Simple View Advanced View

Live Feed 1

Live Camera Feed ●

Frames: 58 FPS: 27



Live Feed 2



None ▼

[None]

None ▼

[None]

None ▼

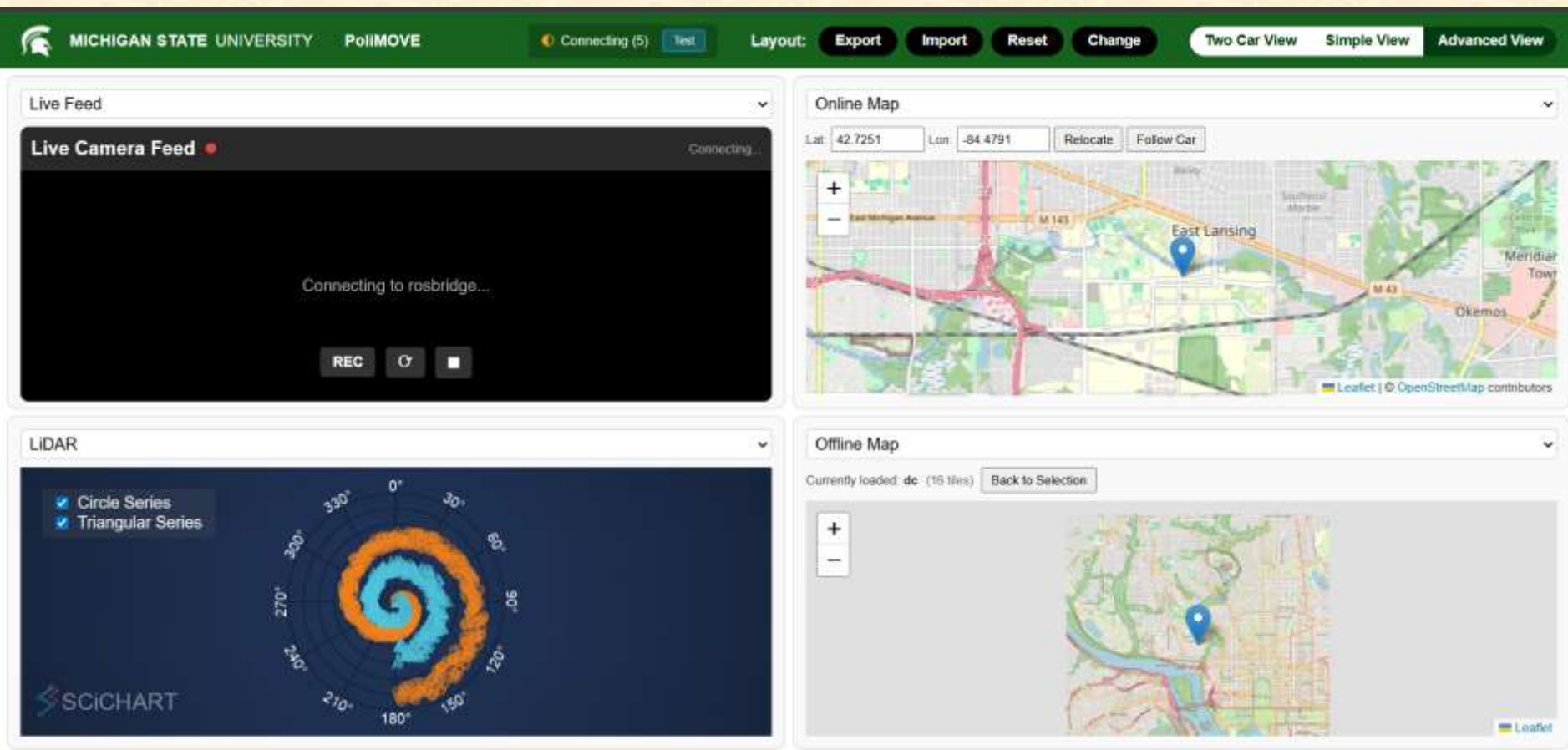
[None]

None ▼

[None]



Advanced View- Offline Map



What's left to do?

- Placing a marker for the car on the offline map
- Driving the car remotely
- Display live data from the car on the front end
- Getting 2 cars running
- Further optimization and documentation



Questions?

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