CSE 145: Developing a Multi-Faceted Integrated Navigation System For Triton AI Racing

Michael Ruddy

Big Goal: Fast, Smart Karts

- Triton-AI
- AKS(Autonomous Karting Series)- Learn Track, Race
- My job - GPS,IMU,Atlas, P1 SDK, Artemis

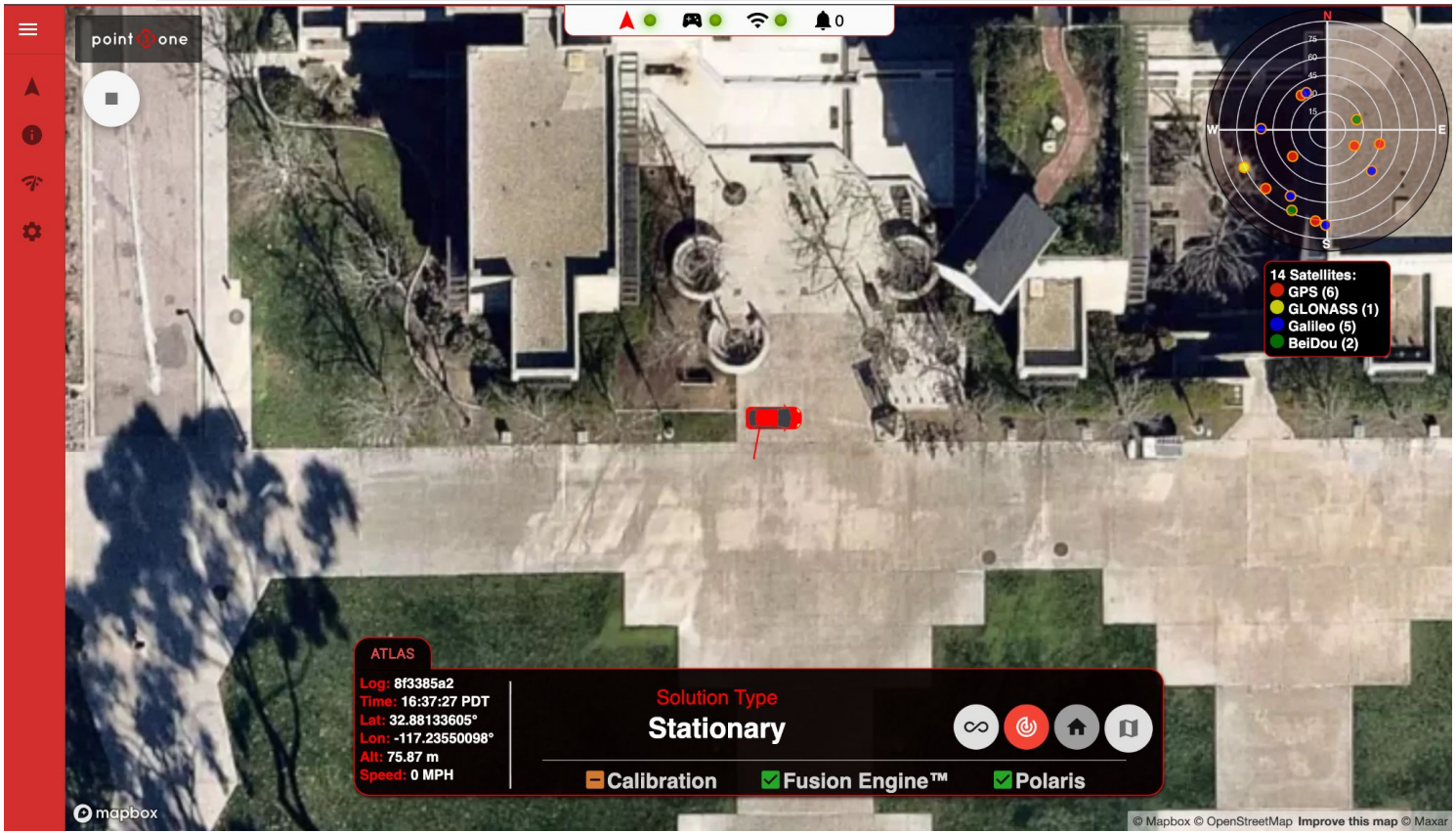
Objectives

- Fuse/Test the IMU and GNSS in the Atlas system, larger scale vehicle tests with the project's system integrated. (current)

- Test IMU/GNSS Fusion on both the Artemis Board and P1 SDK Board, and comparing the findings of all three using test data and quantifiable comparisons. (soon)

- Fuse the Razor IMU with LIDAR Livox MID360 to enable odometry on the vehicle. (down the line)

Accomplishments



Hiccups

- Ran into errors downloading drivers
- Couldn’t connect GPS
- Had to be outside, still need ethernet
- USB-C didn’t cut it
- Progress isn’t always going forward

The Plan

Week 6: Work with the team to integrate the Atlas, with complete GNSS/IMU integration into the vehicle cart and test it

Week 7: Ship the go-cart and go back to working on the scaled P1 driven test robot.

Week 8: Compare IMU data from the P1 with that of the Artemis

Week 9: Learn how to fuse razor IMU with LIDAR Livox MID360 to enable odometry

Week 10 Complete Project Report and finalize collecting all data

Conclusion

- I’m learning a lot so far, have had a lot of early struggles, but I’m confident that I can deliver a high-quality outcome for this project.

- Purdue Race is this weekend so the Integration of the Atlas is urgent!