

CSE 145: DEVELOPING A MULTI-FACETED INTEGRATED NAVIGATION SYSTEM FOR TRITON AI RACING

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BIG GOAL: FAST, SMART KARTS

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



WHAT DID I DO?

- Enable and use GNSS on the ATLAS
- Access raw IMU data from the P1SDK

THE FIRST MISSION



Alexei and Michael

Let me get you two to work together to
get the Atlas demonstrate working this
week

Thank you

Jack

GROUND WORK

- Students who knew device graduated
- Doc Diving

point¹one

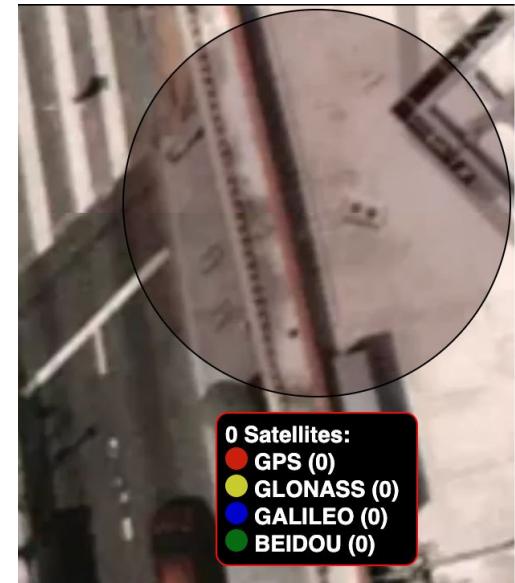


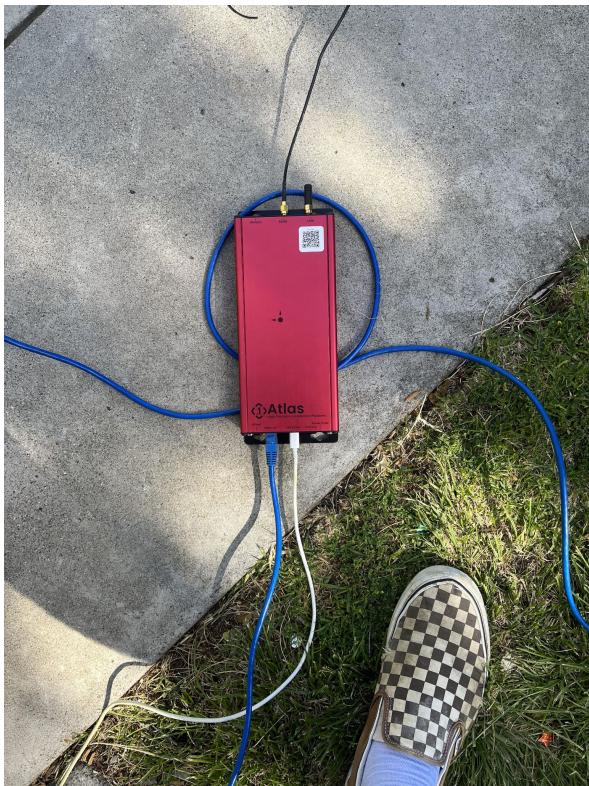
Atlas User Guide
Version 1.5

PROBLEM: ESTABLISHING TCP CONNECTION + GETTING GPS DATA

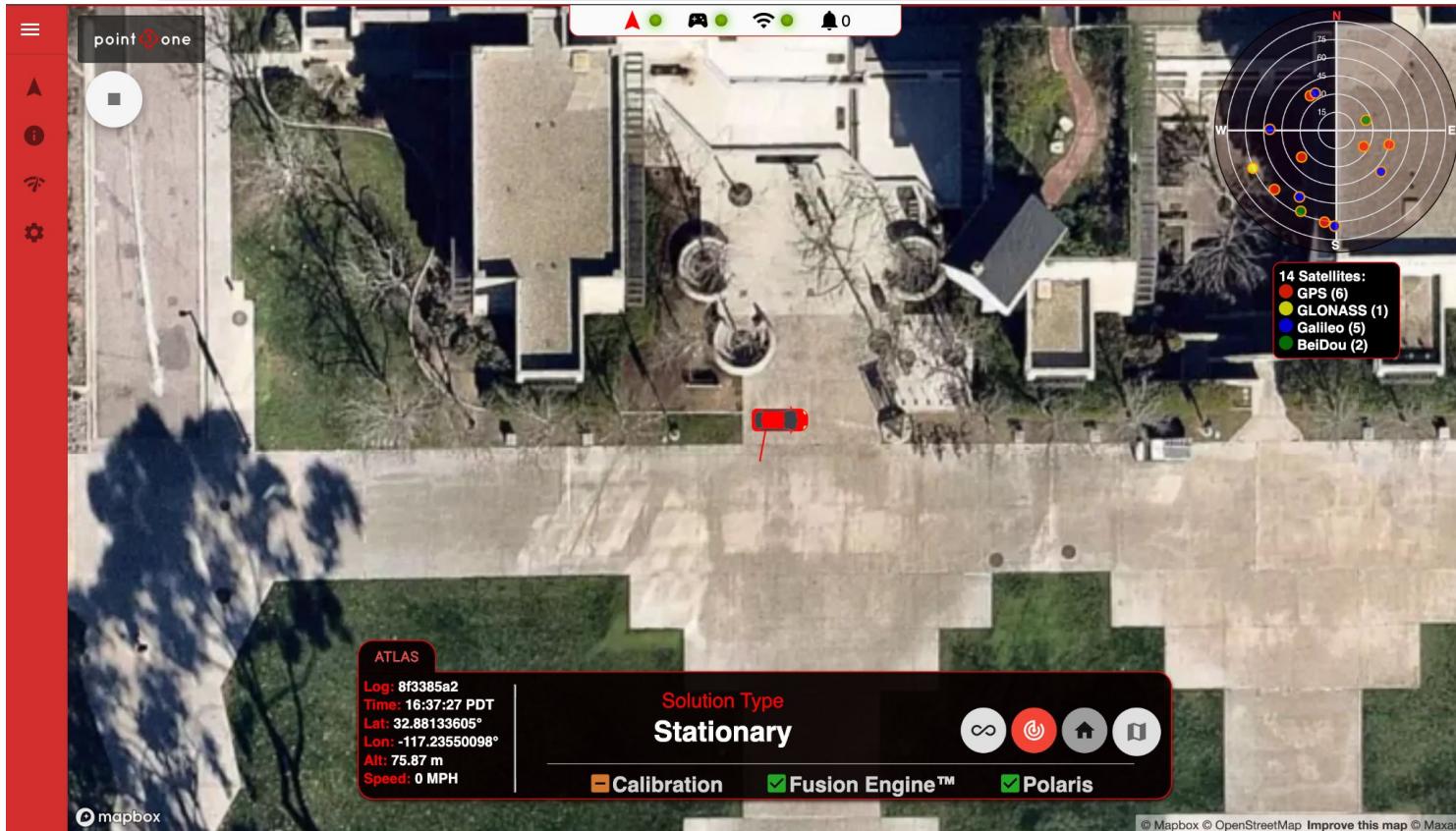
```
ros2 run fusion-engine-driver  
fusion_engine_ros_driver --ros-args -p  
connection_type:=tcp -p  
tcp_ip:=192.168.10.211 -p tcp_port:=30201
```

```
[INFO] [1682630910.504785079]  
[fusion_engine_node]: Error connecting to  
target device: Connection refused (111)
```





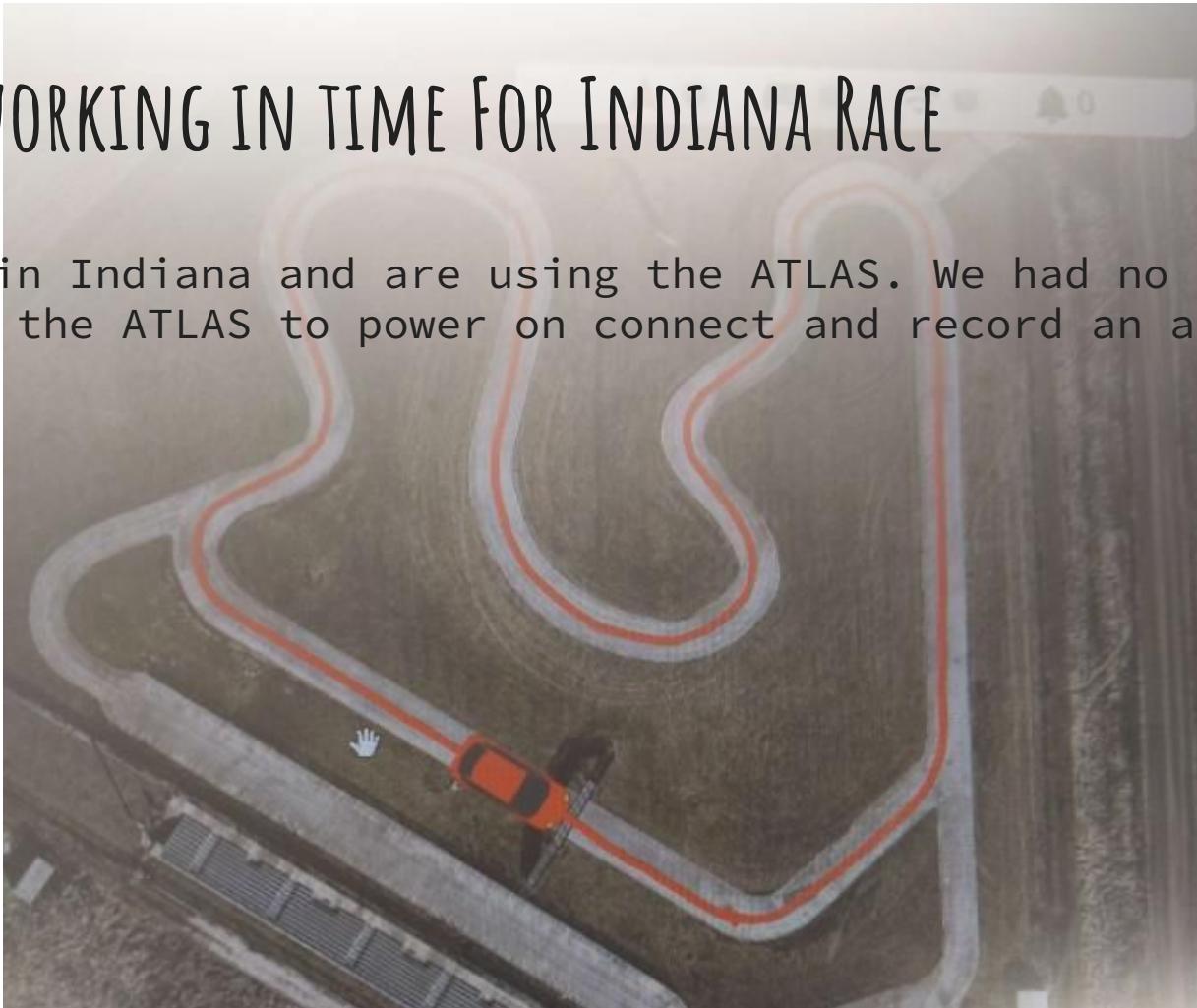
GPS/FUSION ENGINE ONLINE



ATLAS WORKING IN TIME FOR INDIANA RACE

"We're in Indiana and are using the ATLAS. We had no problem getting the ATLAS to power on connect and record an accurate path."

*Write
up



THE SECOND MISSION



Michael,

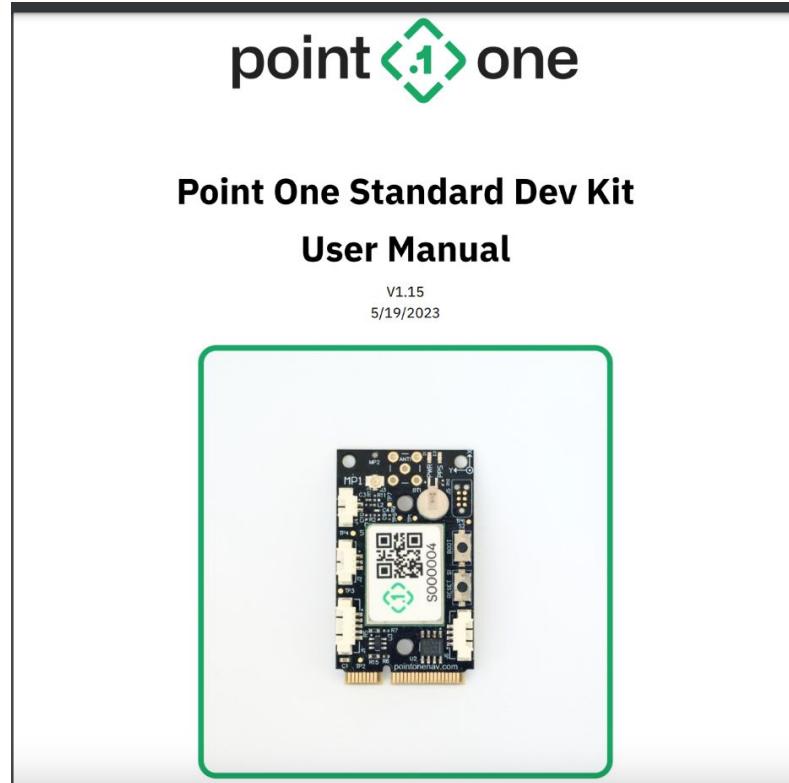
Extract raw IMU data from the P1SDK so we can analyze its quality and determine if we should use this IMU instead of the current Artemis unit.

Thank you,

Jack

(paraphrased)

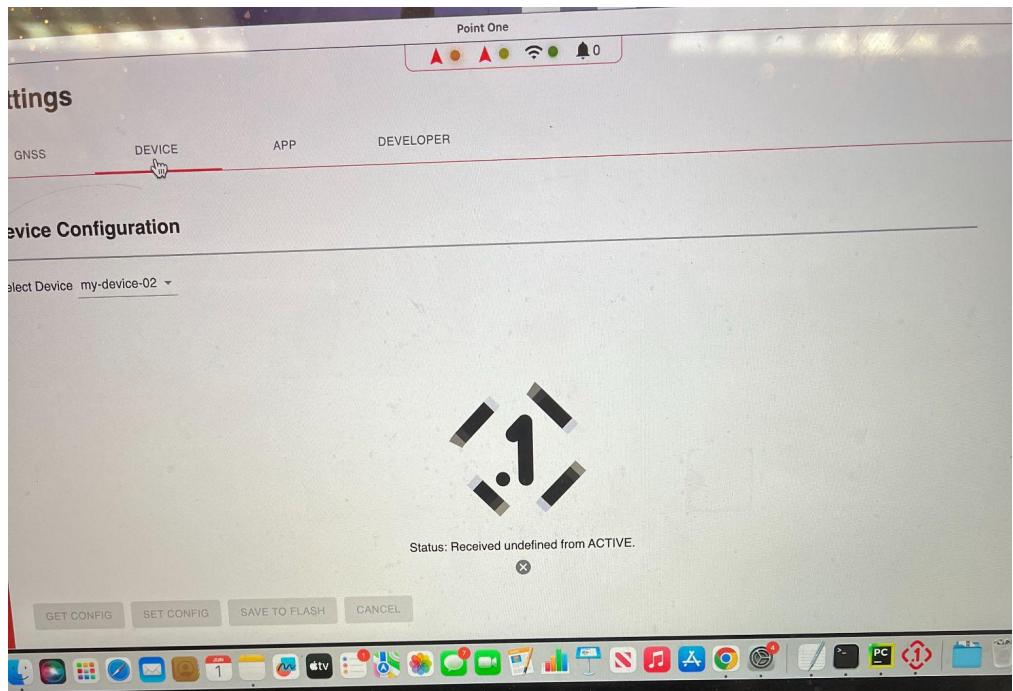
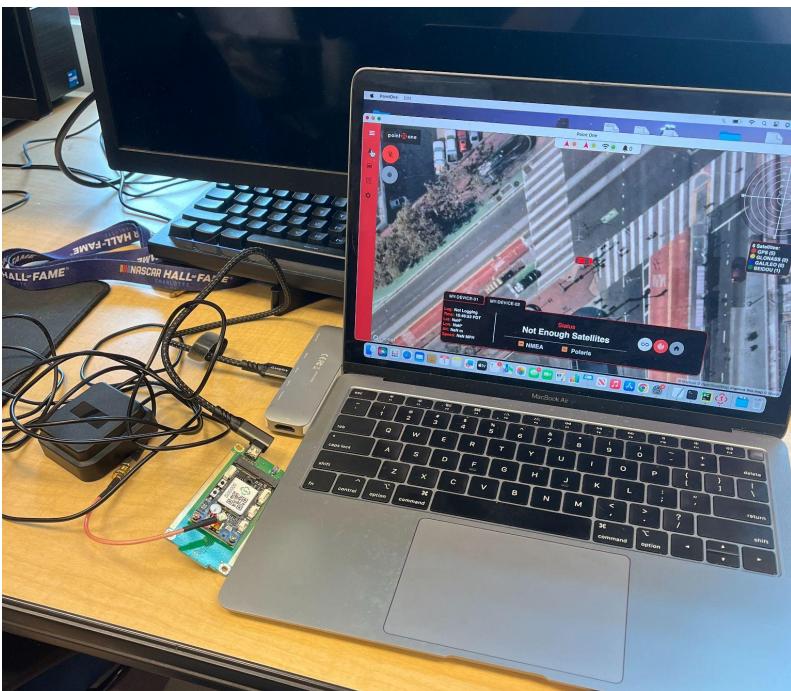
GROUND WORK



ACCESSING THE DEVICE - PI RUNNER

```
[ 1997.574436] usb 1-6: ch341-uart converter now attached to ttyUSB0
[ 3296.401359] ch341-uart ttyUSB0: ch341-uart converter now disconnected from ttyUSB0
[ 3311.773393] usb 1-12.1: ch341-uart converter now attached to ttyUSB0
[434024.592225] usb 1-3: ch341-uart converter now attached to ttyUSB0
[1205863.198019] usb 1-12.2: cp210x converter now attached to ttyUSB1
[1205863.200938] usb 1-12.2: cp210x converter now attached to ttyUSB2
[1206169.467171] cp210x ttyUSB1: cp210x converter now disconnected from ttyUSB1
[1206169.467788] cp210x ttyUSB2: cp210x converter now disconnected from ttyUSB2
```

ACCESSING THE DEVICE - DESKTOP CLIENT



REBOOTING THE DEVICE / INSTALLING NEW FIRMWARE



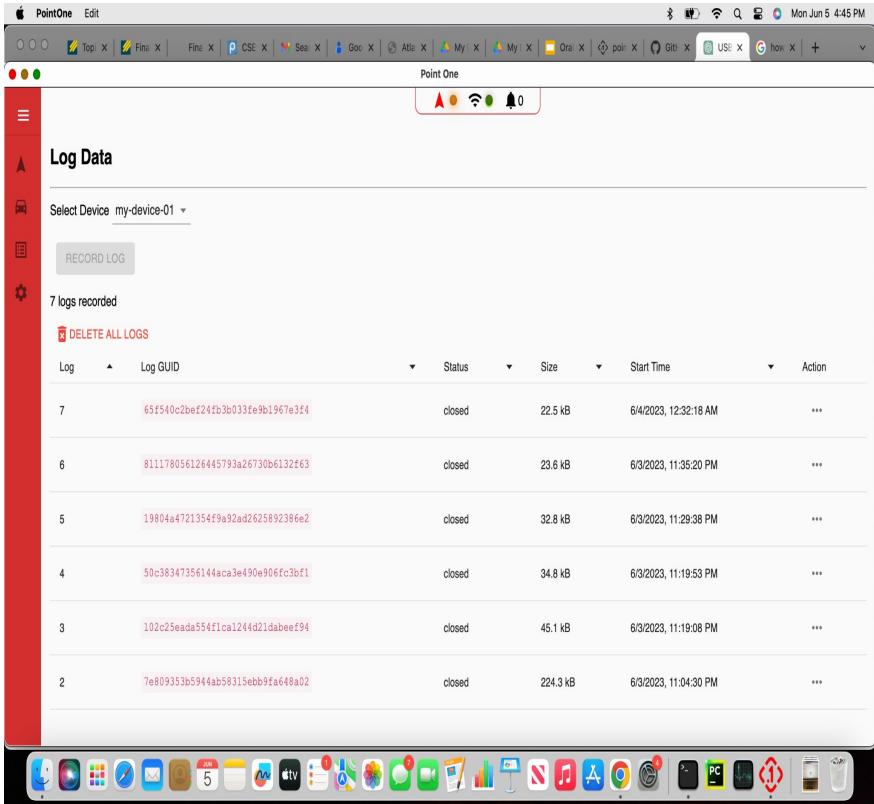
Michael you need updates which require a command line tool, identifying the serial port the device is using, and a new bootloader file.

REBOOT AND DOWNLOAD FIRMWARE

After procedure I was able to request IMU data and log the information to be opened in rosviz.

*Write Up

*Lidar



CONCLUSION

- Getting devices to talk to each other is difficult
- Struggles of niche items
- Struggles of knowledge transfer
- Thanks Triton AI