



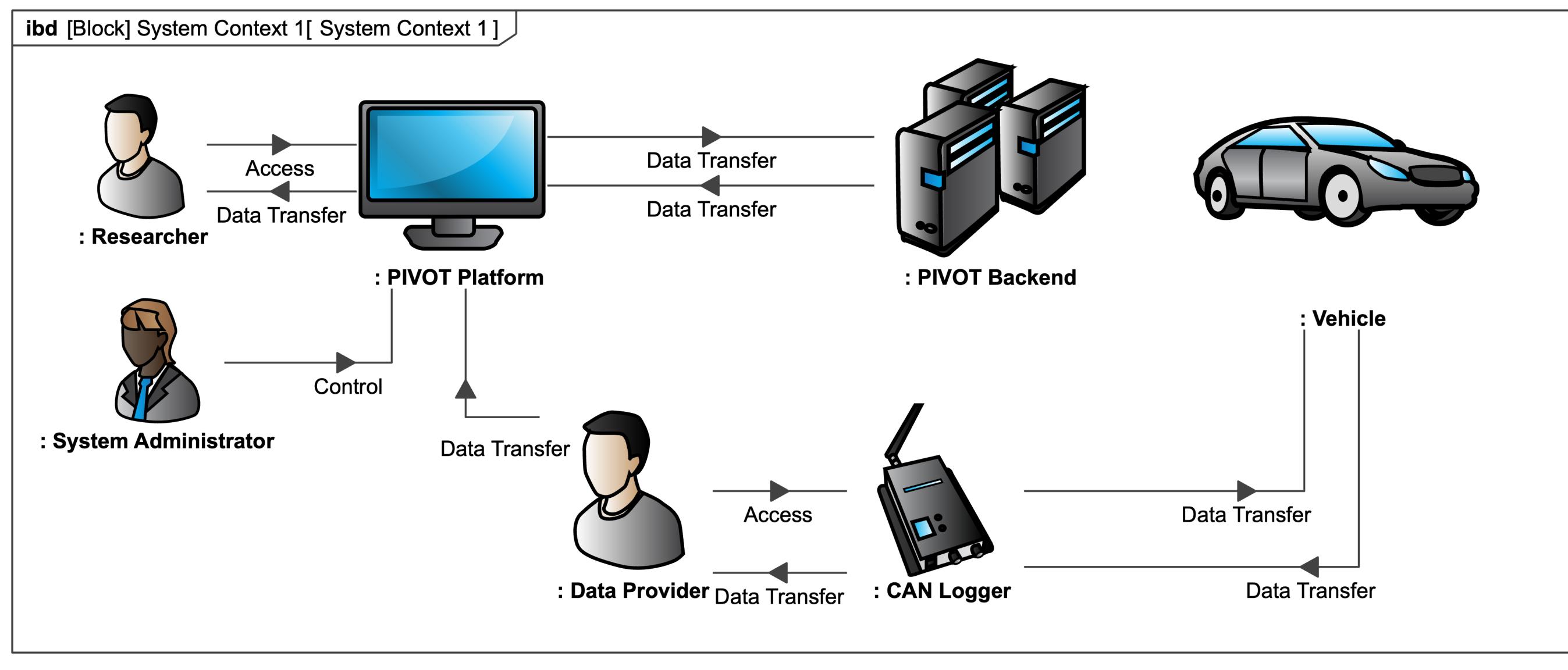
PIVOT CAN LOGGER

Chandrima Ghatak and Jeremy Daily
Department of Systems Engineering
Colorado State University

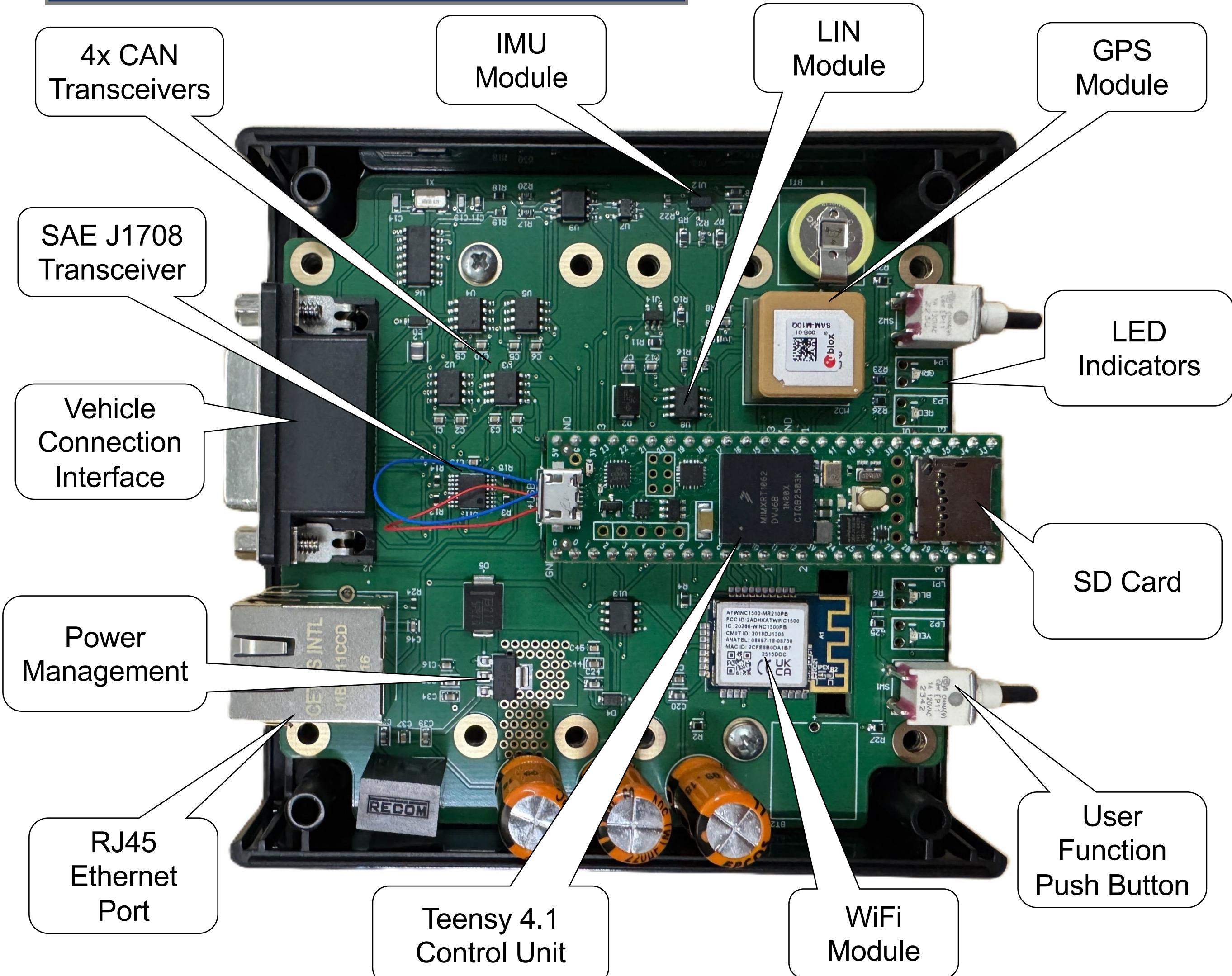


SYSTEM CONTEXT AND OVERVIEW

- High-fidelity in-vehicle datasets are scarce, fragmented, or locked behind OEM or fleet contracts.
- Researchers in cybersecurity, autonomy, and transportation cannot reproduce or benchmark work without shared data.
- PIVOT CAN Logger acts as the edge-level collection node within the broader PIVOT pipeline.
- Enables crowdsourced data capture. Designed for reproducible, multi-domain data capture.



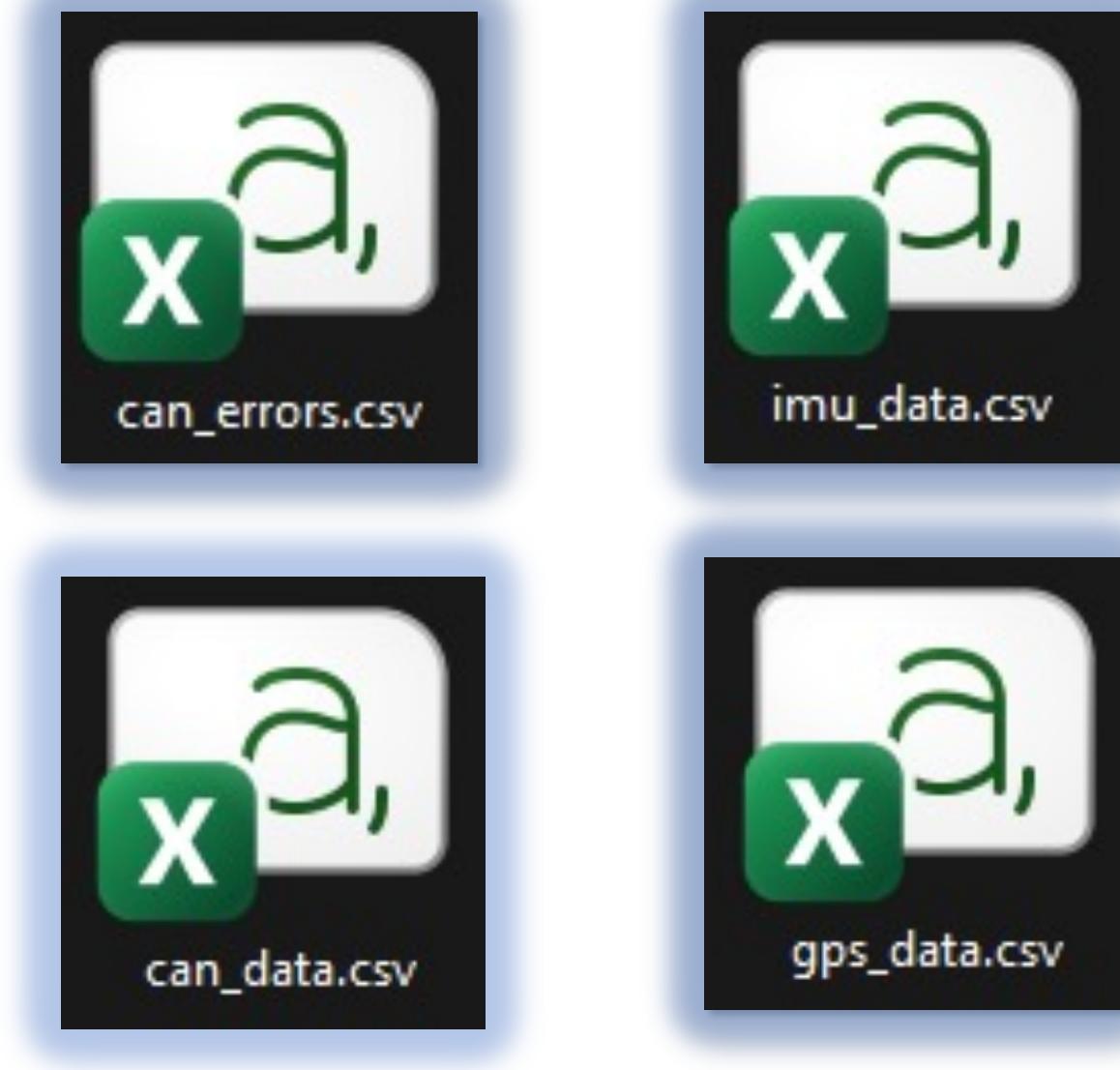
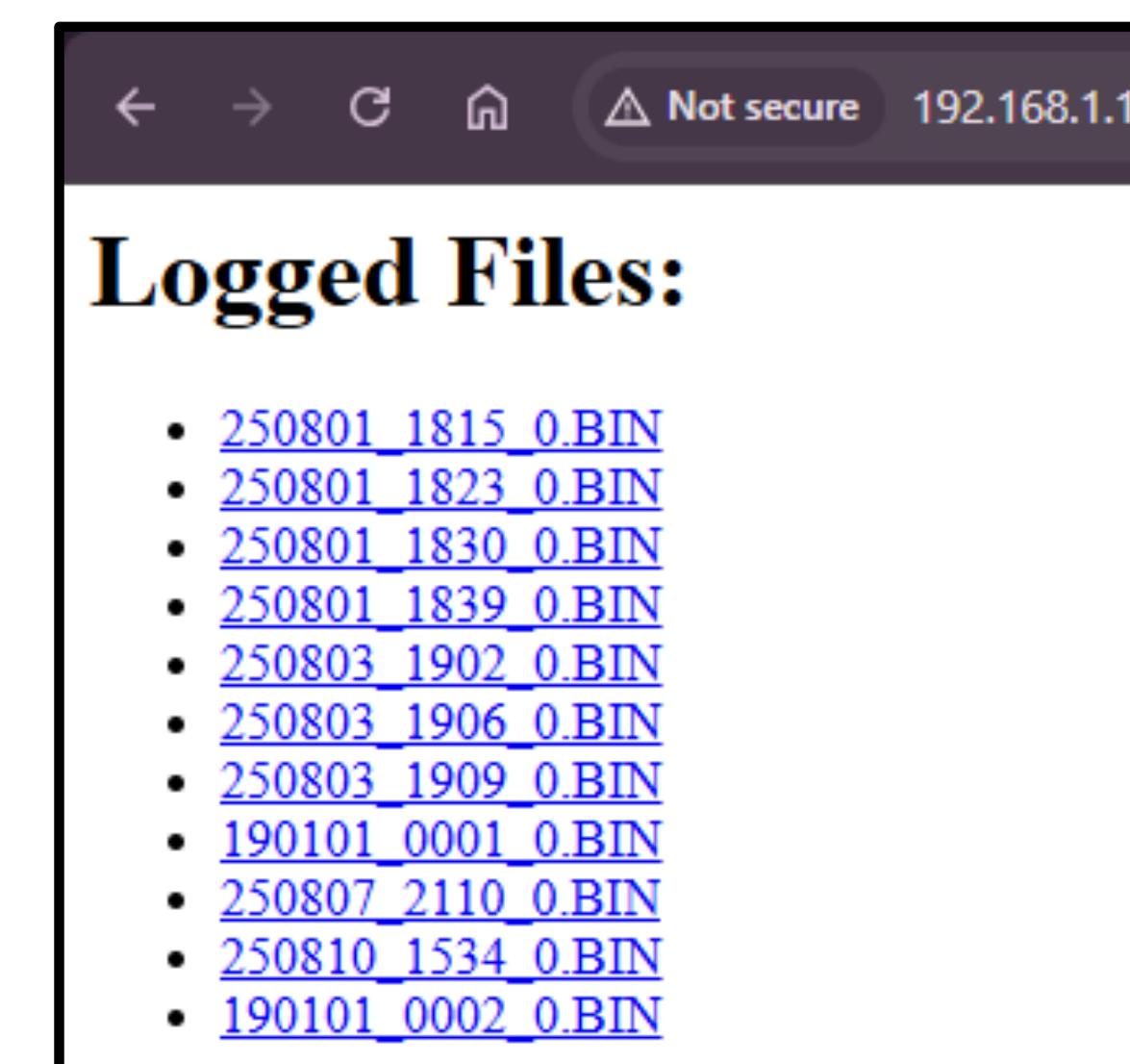
DESIGN AND CAPABILITIES



FIELD DEPLOYMENT



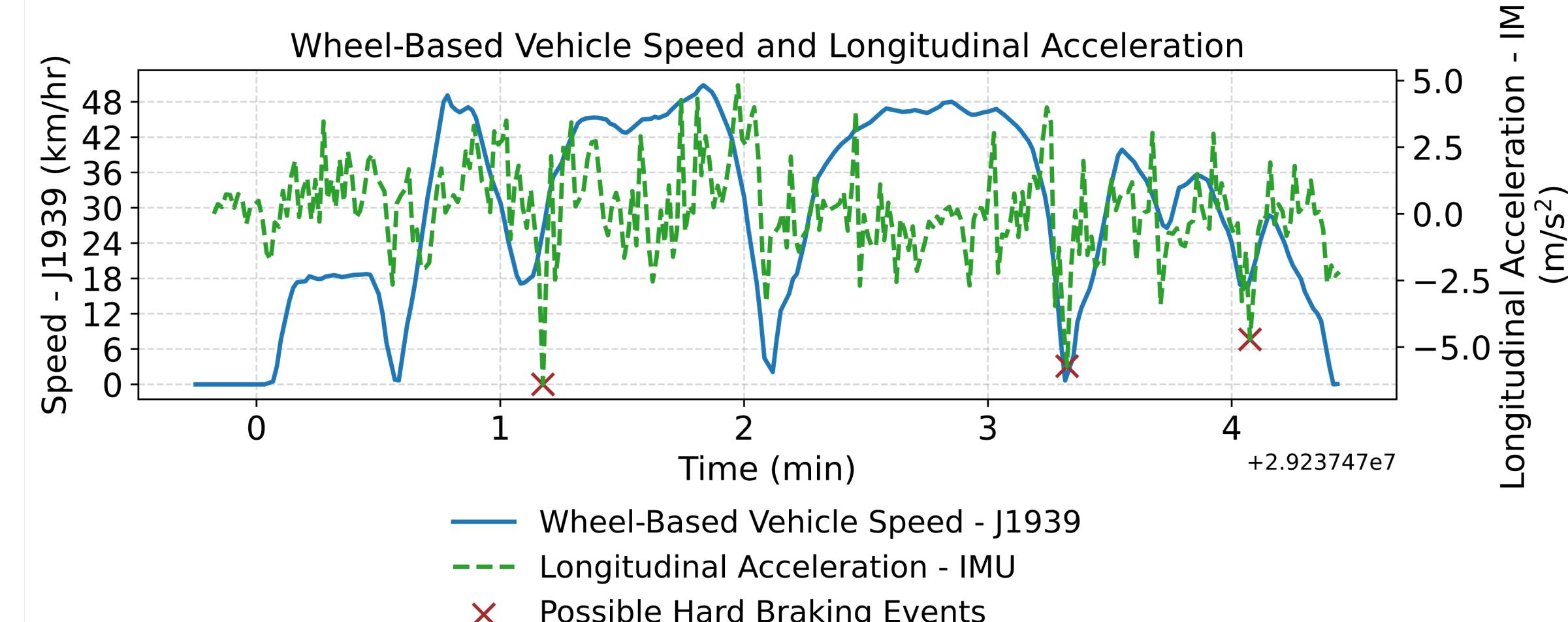
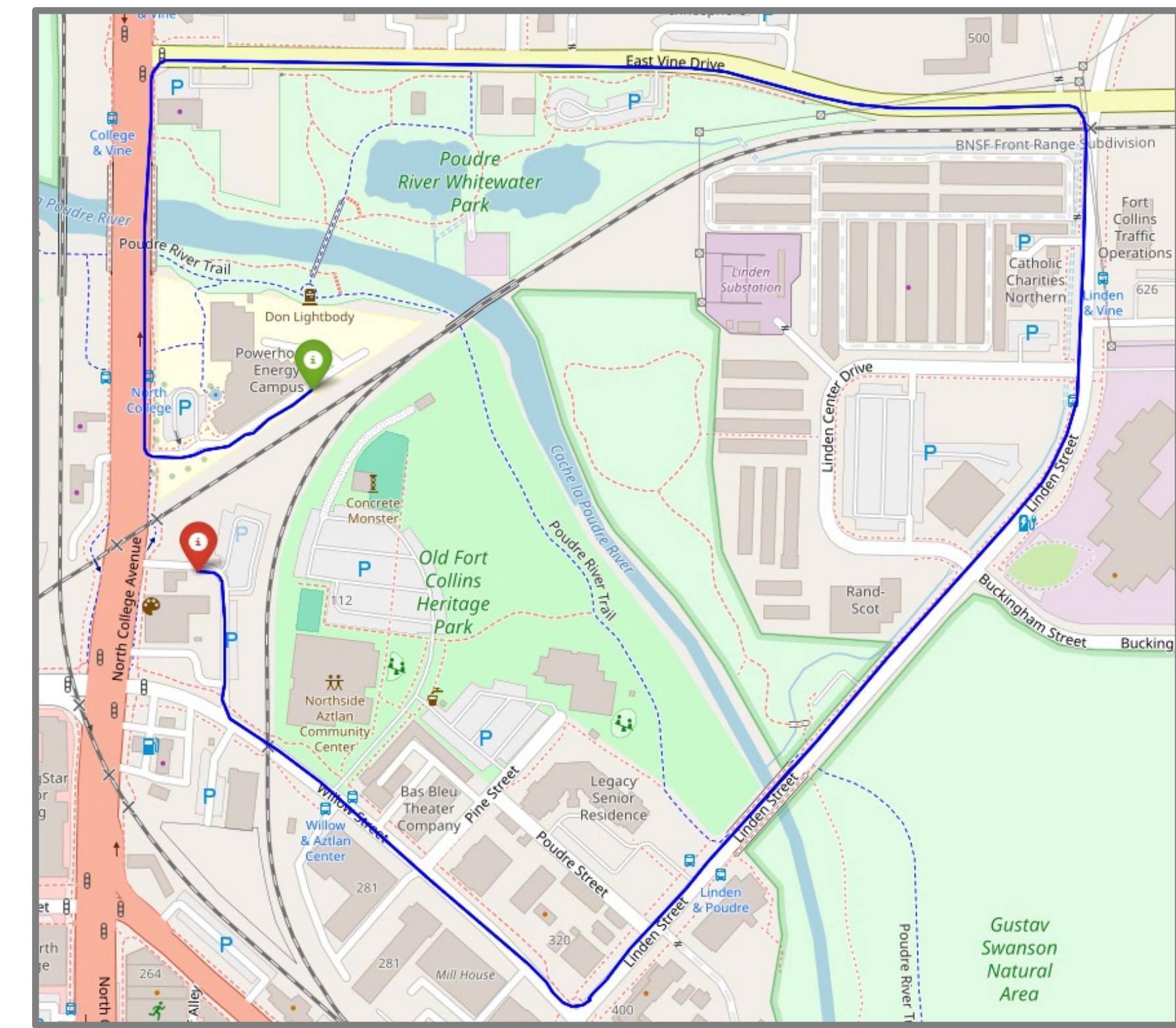
DATA RETRIEVAL AND DECODING



A	B	C	D	E	F	G	H
1	timestamp_us	id	length	data	extended	overrun	mailbox
2	'1754248185000000'	0x18FCF200	8	[225, 255, 255, 255, 255, 255, 255, 255]	1	0	99 CAN1
3	'1754248185000572'	0x18FEDF00	8	[134, 160, 40, 125, 127, 255, 255, 241]	1	0	99 CAN1
4	'1754248185001156'	0x18FDC600	8	[252, 4, 255, 255, 255, 255, 255, 255]	1	0	99 CAN1
5	'1754248185001748'	0x18F00F00	8	[255, 255, 255, 255, 255, 255, 255, 255]	1	0	99 CAN1
6	'1754248185003597'	0x0CF00300	8	[209, 0, 28, 255, 255, 15, 97, 128]	1	0	99 CAN1
7	'1754248185004169'	0x18FEF100	8	[255, 0, 0, 252, 255, 104, 0, 207]	1	0	99 CAN1
8	'1754248185005257'	0x0CF00203	8	[192, 0, 0, 255, 247, 177, 23, 3]	1	0	99 CAN1
9	'1754248185005877'	0x0CF00C03	8	[238, 3, 111, 24, 255, 255, 255, 255]	1	0	99 CAN1
10	'1754248185008638'	0x18FEEE00	8	[128, 255, 255, 255, 255, 255, 255, 255]	1	0	99 CAN1

DATA ANALYSIS AND FINDINGS

The figure on the right shows the GPS trajectory of the field deployment drive, providing spatial context for the collected data and confirming that telemetry was gathered during normal on-road operation. The figure below shows a time-aligned comparison of wheel-based vehicle speed reported via J1939 and longitudinal acceleration measured by the onboard IMU. Periods of negative longitudinal acceleration correspond to reductions in wheel-based speed, demonstrating consistency between network-reported and on-board sensors.



COMMUNITY RELEASE

Hardware and firmware are approaching final release, with validation and optimization underway. The project is supported through GitHub and the PIVOT ecosystem, and we welcome community participation from testers and data providers.



This material is based upon work supported by the [National Science Foundation](#) under Grant Number [2213735](#). Any opinions, findings, and conclusions or recommendations expressed in this material are those of the author(s) and do not necessarily reflect the views of the National Science Foundation.