Research Activities Management Portal

R A M P

Your Interface to ScooterLab Data and Research Activities

https://scooterlab.utsa.edu/ramp

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ScooterLab Workshop 2026
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What is RAMP

RAMP is the bridge between ScooterLab’s sensor-rich e-scooter testbed and your research.

SCOOTERLAB

ScooterLab operates a fleet of instrumented e-scooters in San Antonio, collecting rich sensor data: GPS, IMU, video, audio, and more, providing access to real-world trips.

RAMP

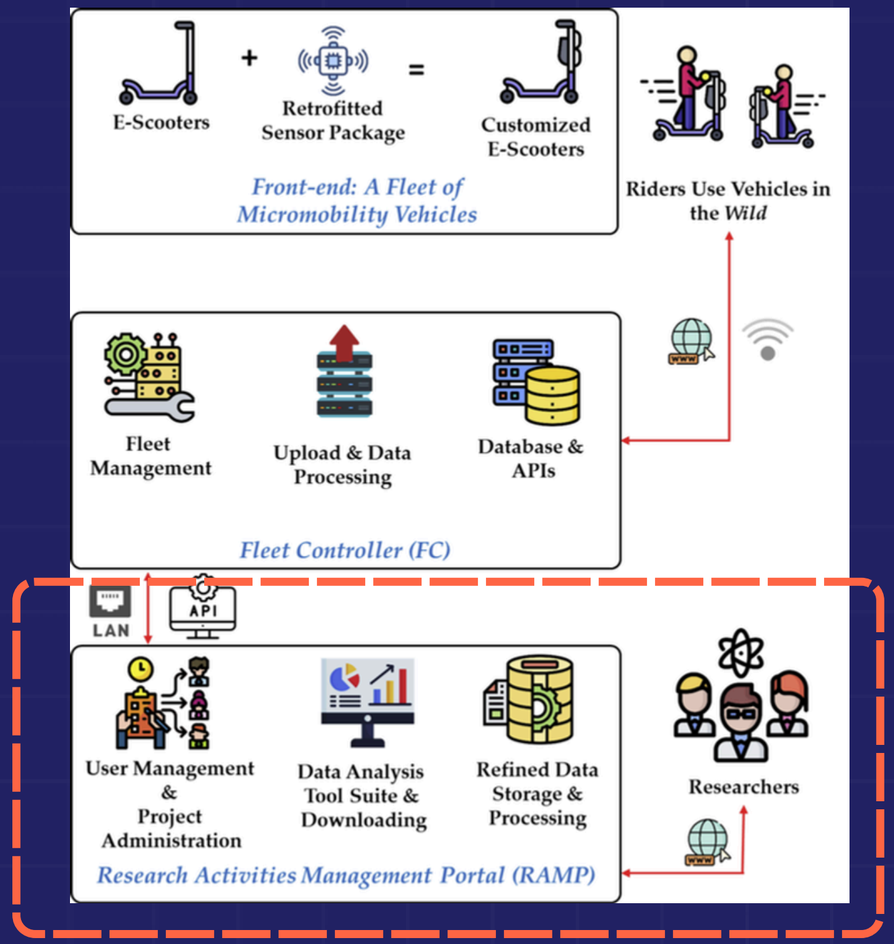
RAMP is the web portal that provides researchers secure, structured access to the Scooterlab data, with tools to filter, visualize, preview, and export exactly what they need.

YOUR RESEARCH

Whether you study transportation, safety, urban mobility, or human factors, RAMP turns raw scooter data into publication-ready datasets, with no infrastructure setup required.

RAMP Infrastructure

- **Back-end:** PHP (Laravel) · JavaScript frontend
- **Compute:** 4× Nvidia L4OS GPUs (46GB VRAM each)
- **Storage:** 15 TB · 2 TB RAM · Dual Intel Xeon Platinum



Our Journey

2024 July

RAMP – Soft Launch

One project
Map tool and administration

2025 May

RAMP Launched

5 early adopter teams
Stats tool, data downloading v1.0

2025–2026

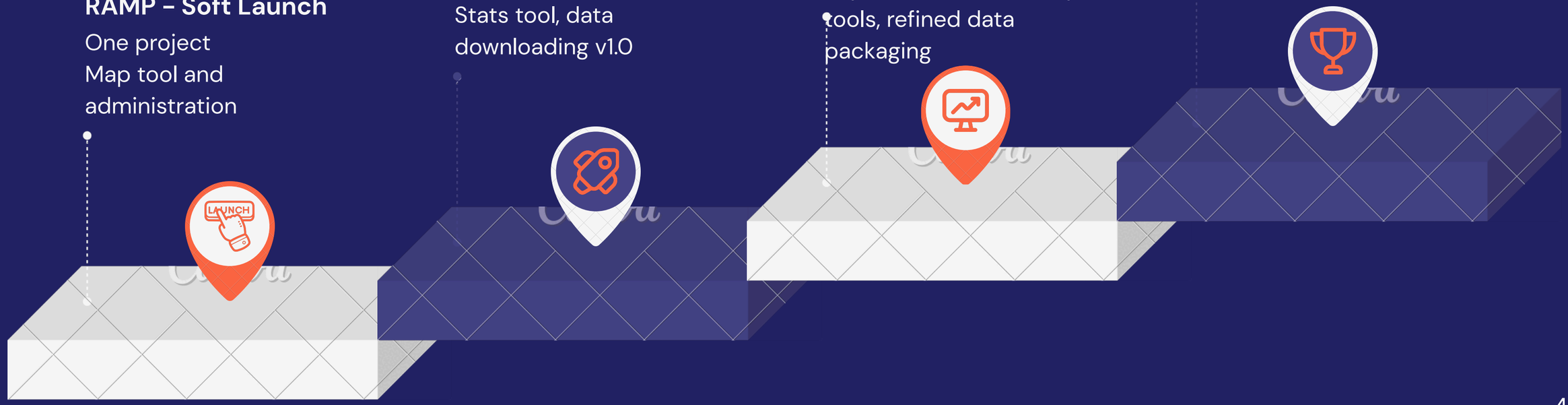
Expanded capabilities

7 collaborator teams
Dashboard analytics, improved stats and Map tools, refined data packaging

Today

Maturing Platform

A complete research data pipeline for ScooterLab collaborators



RAMP at a Glance

Dashboard Insights

- At-a-glance daily data collection summaries
- Accumulated trip counts & total trip distances
- Sensor specifications

Interactive Data Visualization

- Map & Stats tools with granular filtering
- Plot individual trip metrics; export charts as PDF

Video & Audio Playback

- In-browser playback
- Download individual media files
- Seamlessly integrated into Map & Stats tools

Data Fitering

- Filter data by scooter fleet, spatiotemporal, and data properties

Data Export

- Mass download with same filters as visualization and data selection
- Select specific data streams; choose CSV or JSON
- Auto-packaged ZIP with README (fields, specs, structure)

Integrated Tutorials

- Step-by-step guides linked within the portal

RAMP Summary

5
Projects

7 Teams
17 Users

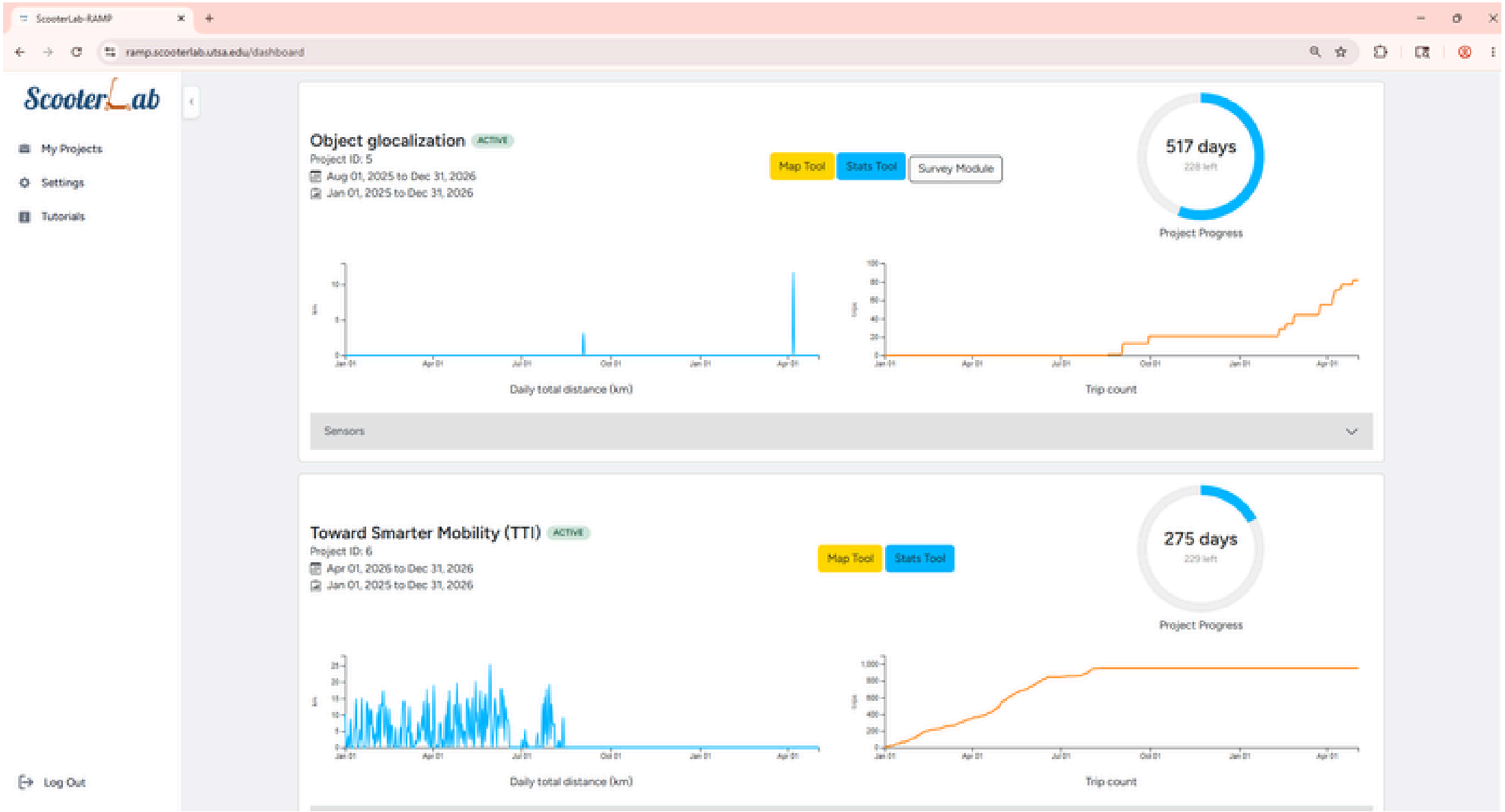
12
Dataset Downloads

250+
Queries

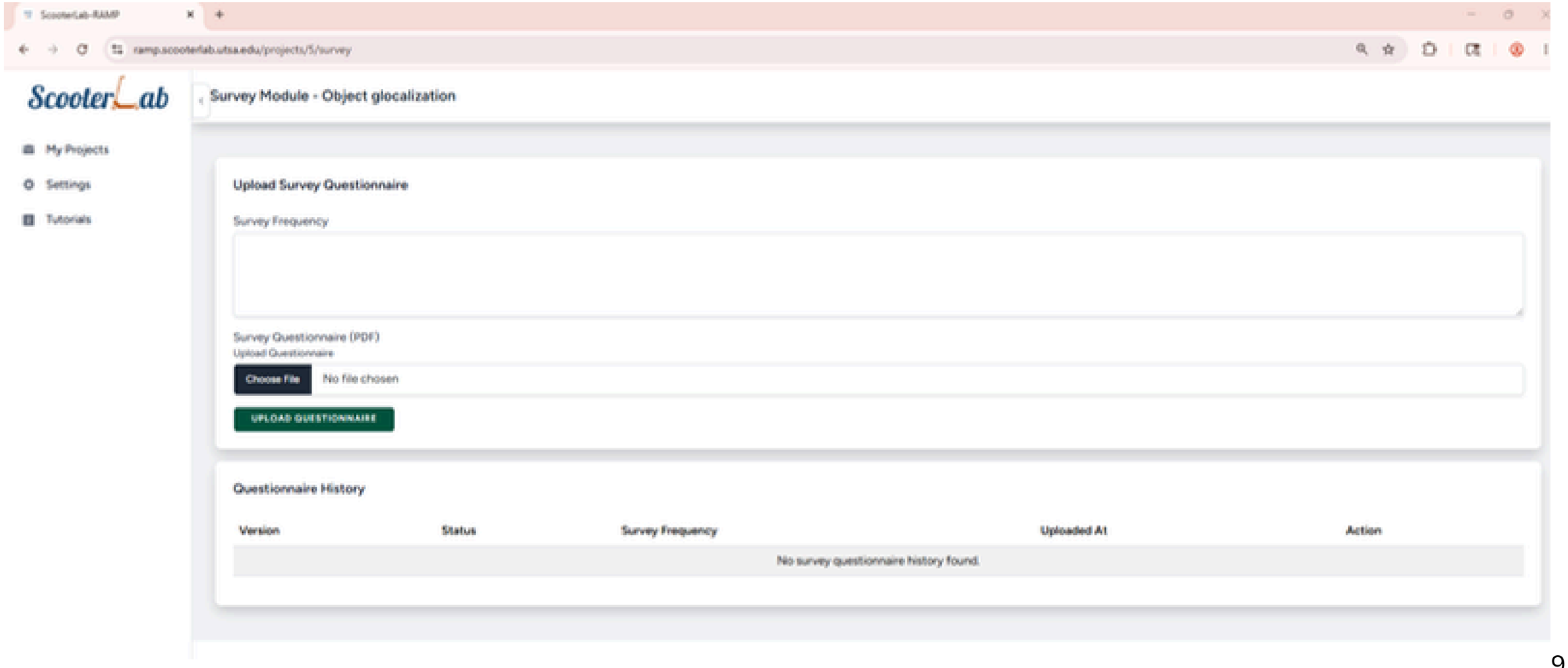
RAMP Features

https://ramp.scooterlab.utsa.edu

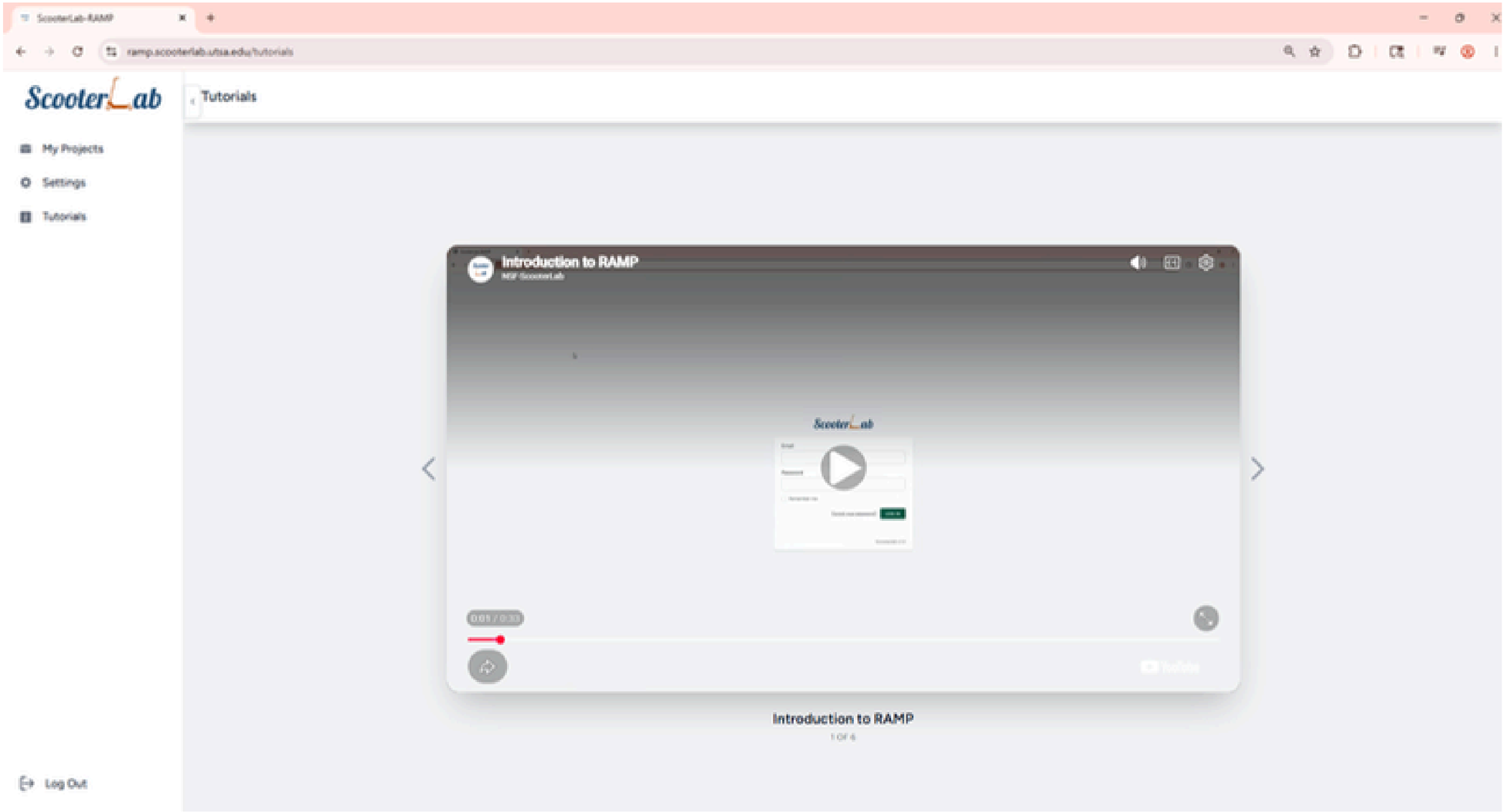
RAMP Dashboard



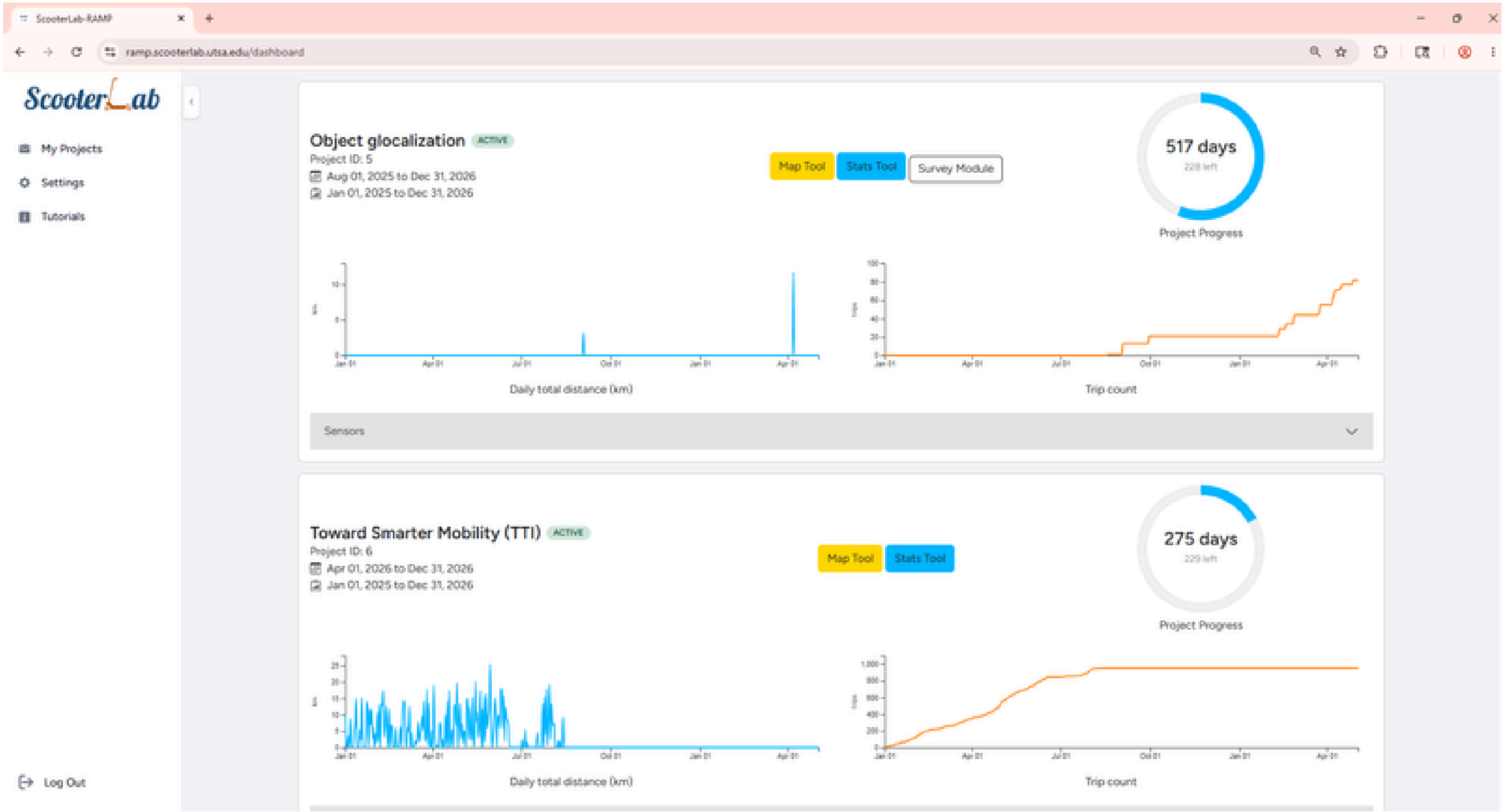
Uploading Survey



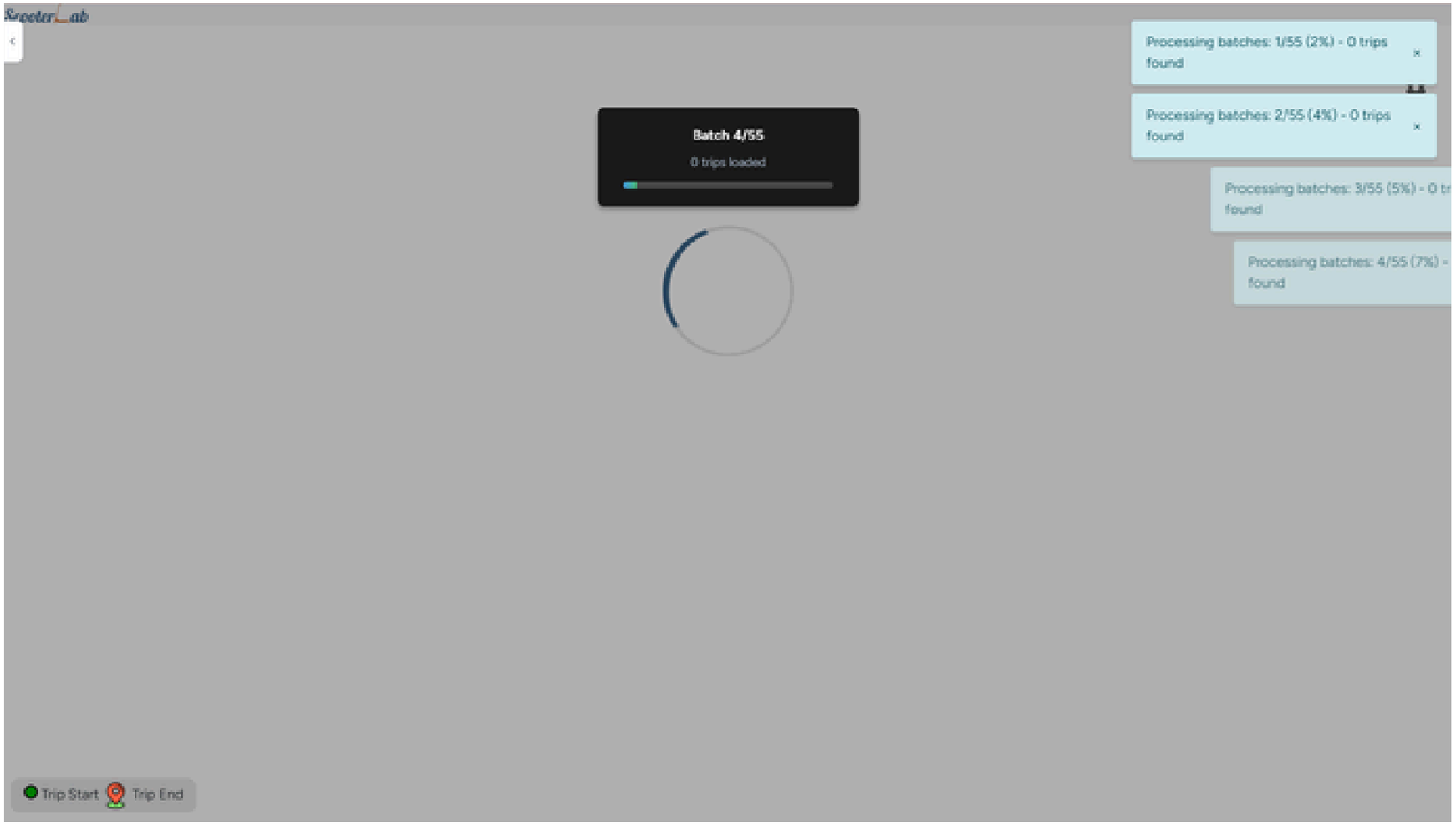
RAMP Tutorials



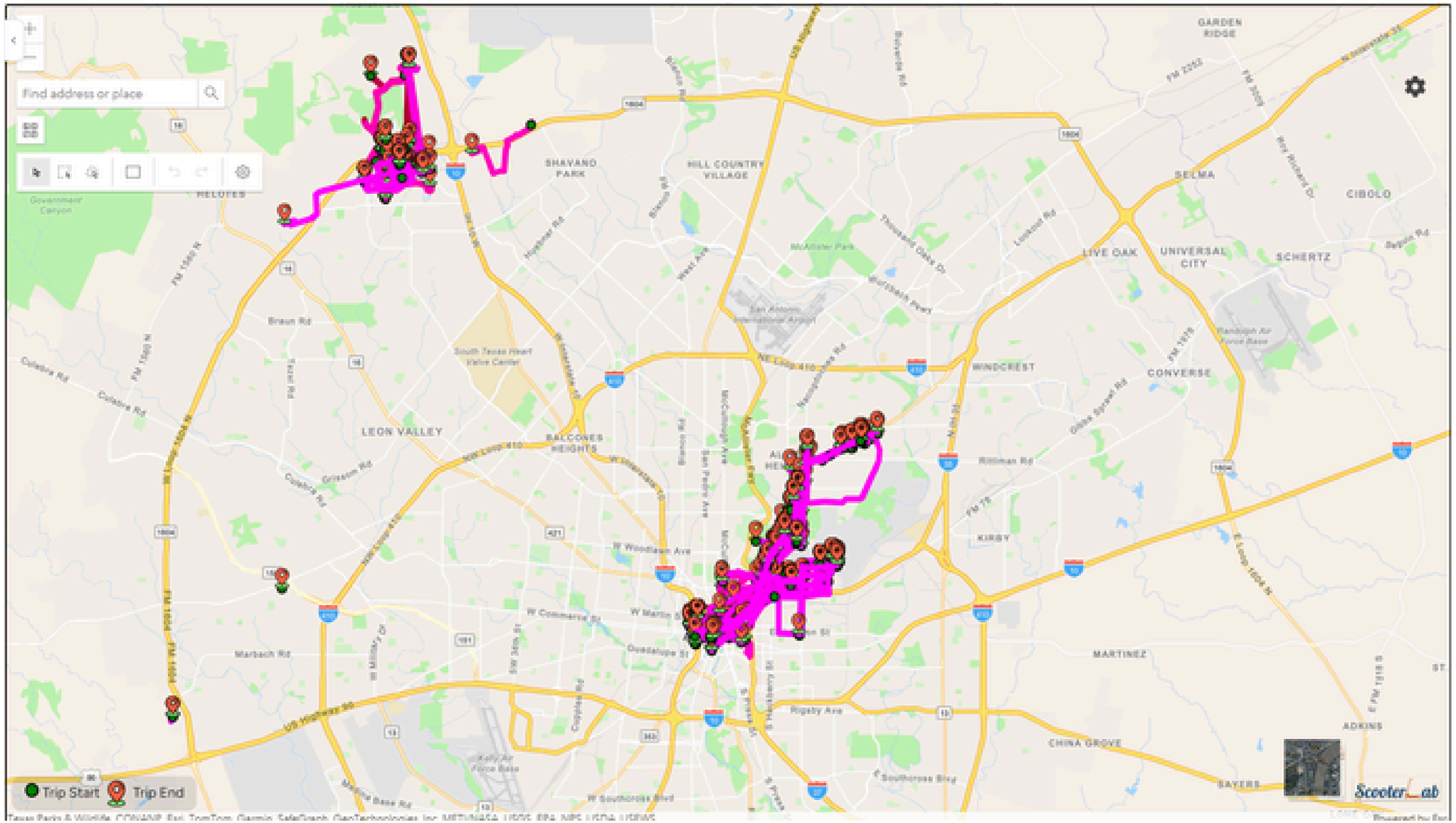
RAMP Dashboard



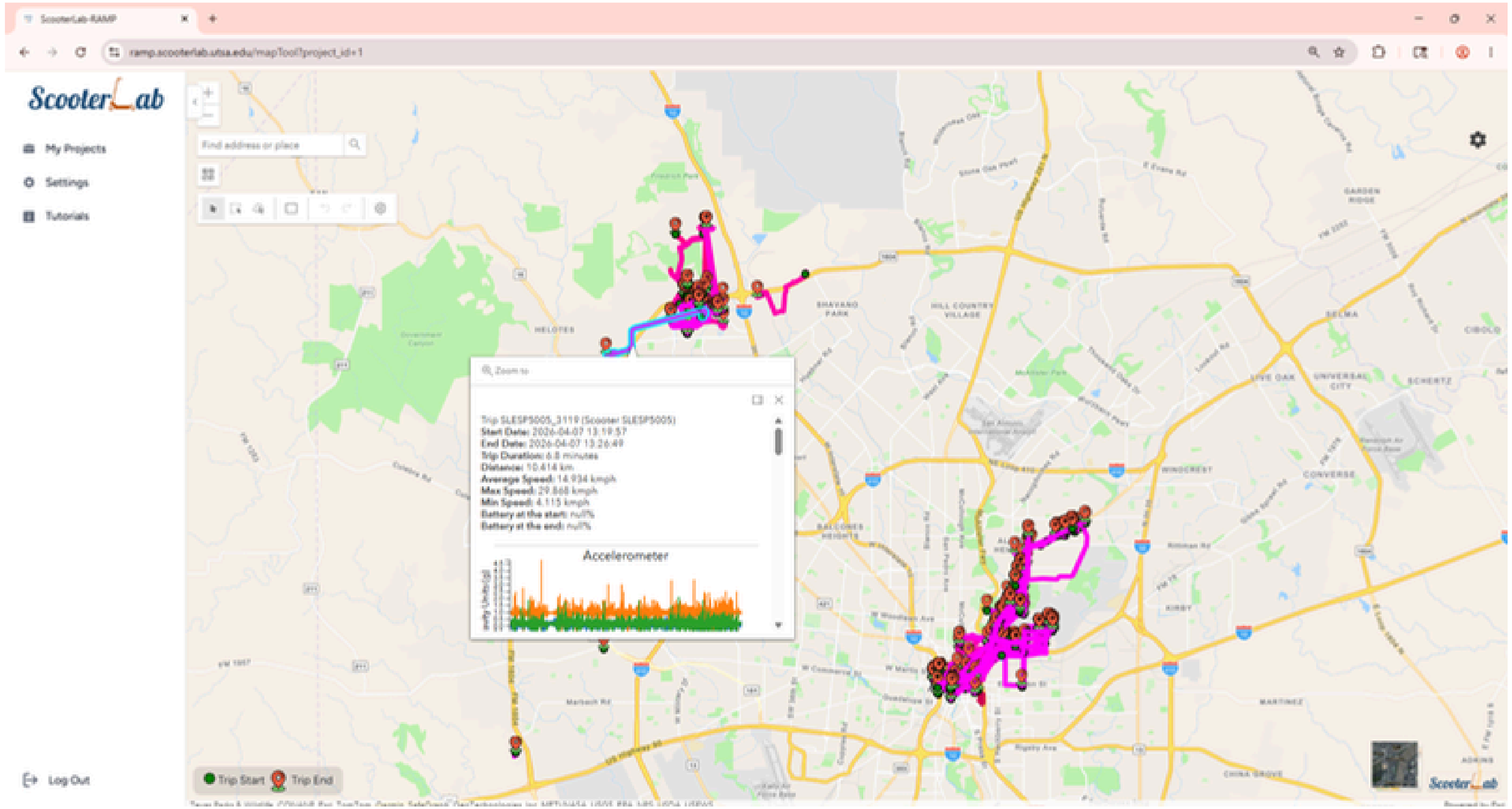
Map Tool - Loading



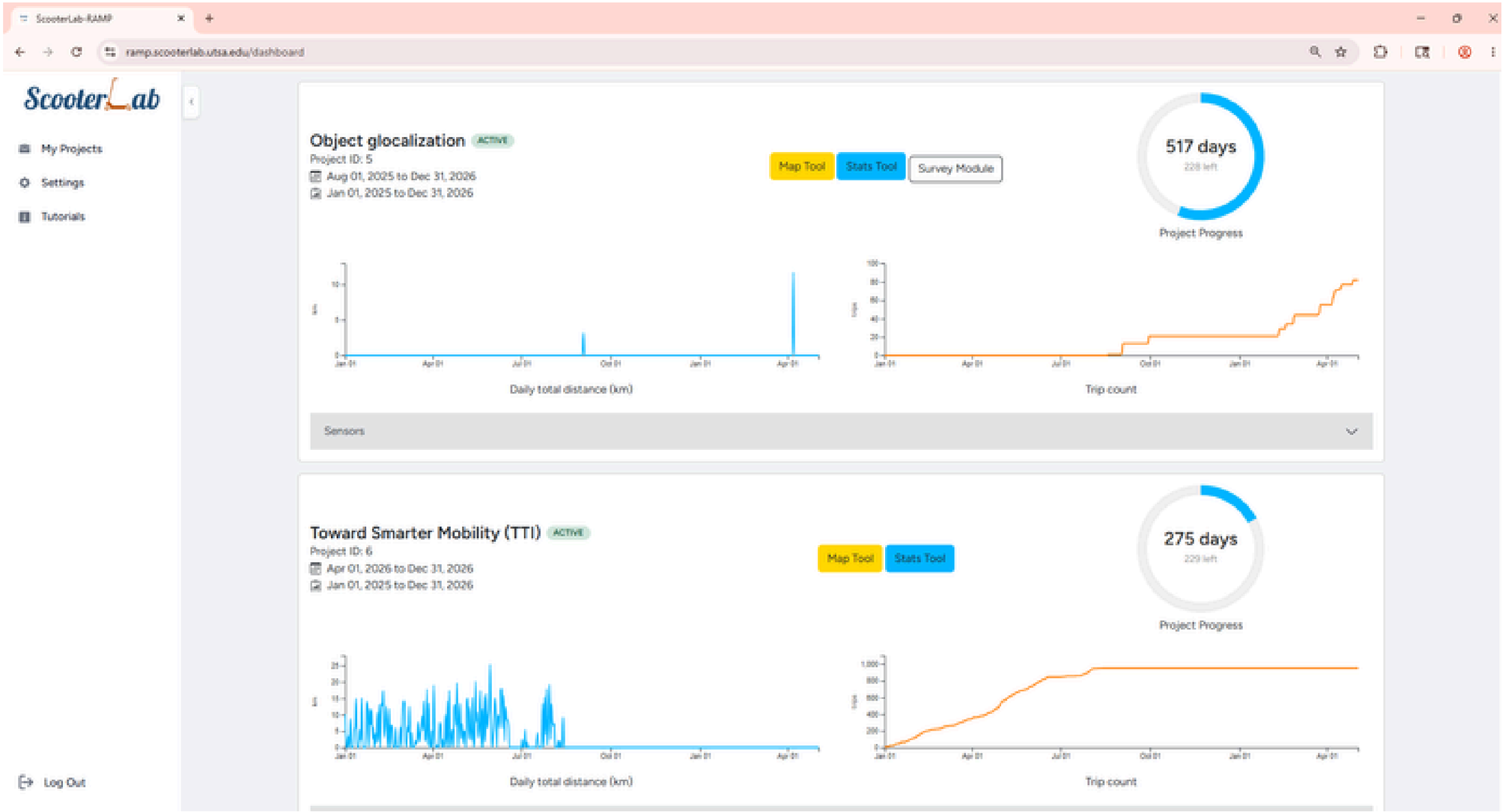
Map Tool


Find address or place
Trip Start
Trip End
SHAVANO PARK
HILL COUNTRY VILLAGE
HELOTES
LEON VALLEY
BALCONES HEIGHTS
WINDCREST
SELMA
LIVE OAK
UNIVERSAL CITY
SCHERTZ
CIBOLO
CONVERSE
KIRBY
MARTINEZ
CHINA GROVE
ADKINS
SAYERS
GARDEN RIDGE
Braun Rd
Culebra Rd
Marbach Rd
W Woodlawn Ave
W Commerce St
Rigsby Ave
E Southcross Blvd
W Southcross Blvd
Scooter_ab

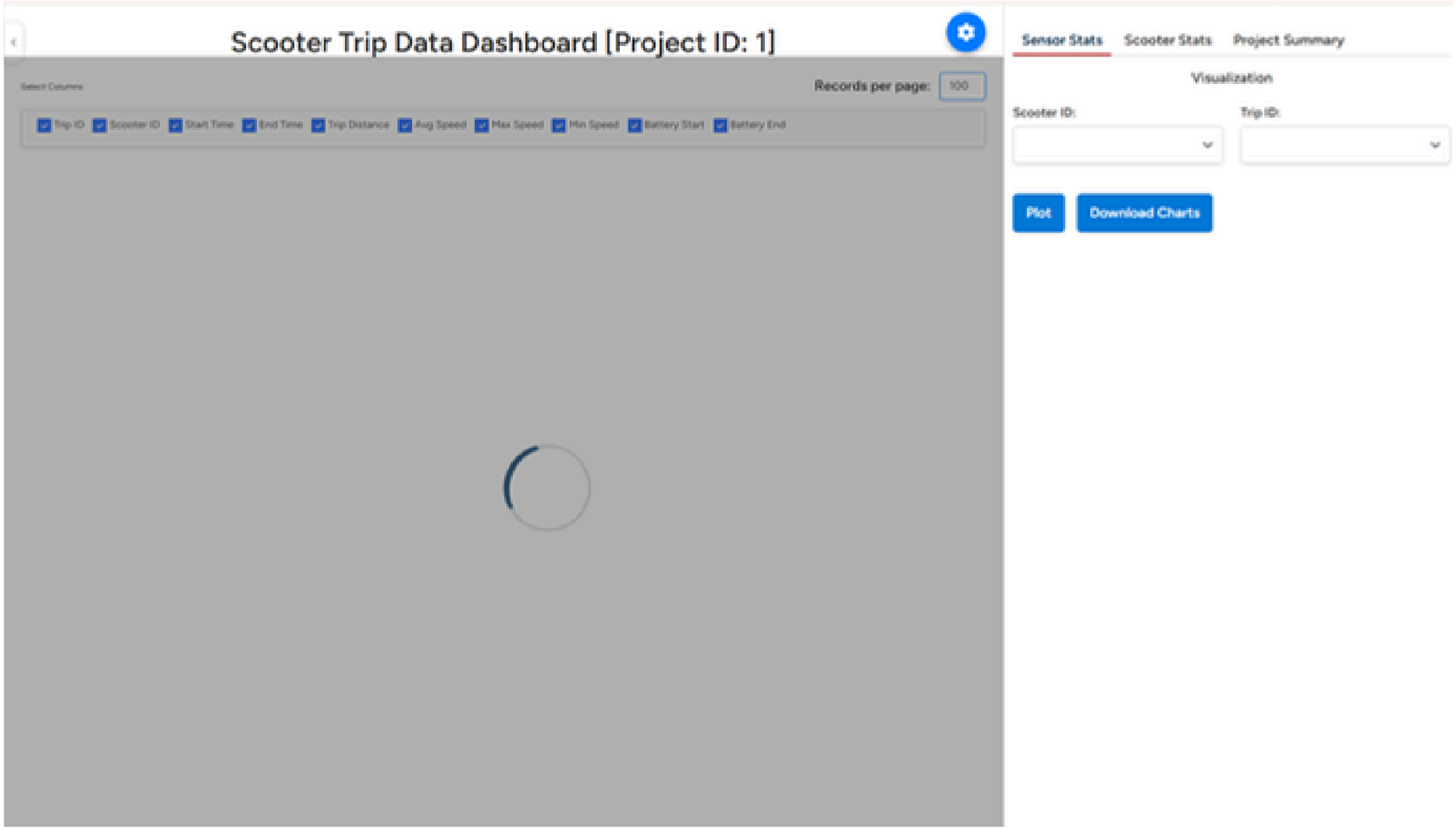
Map Tool - Trip



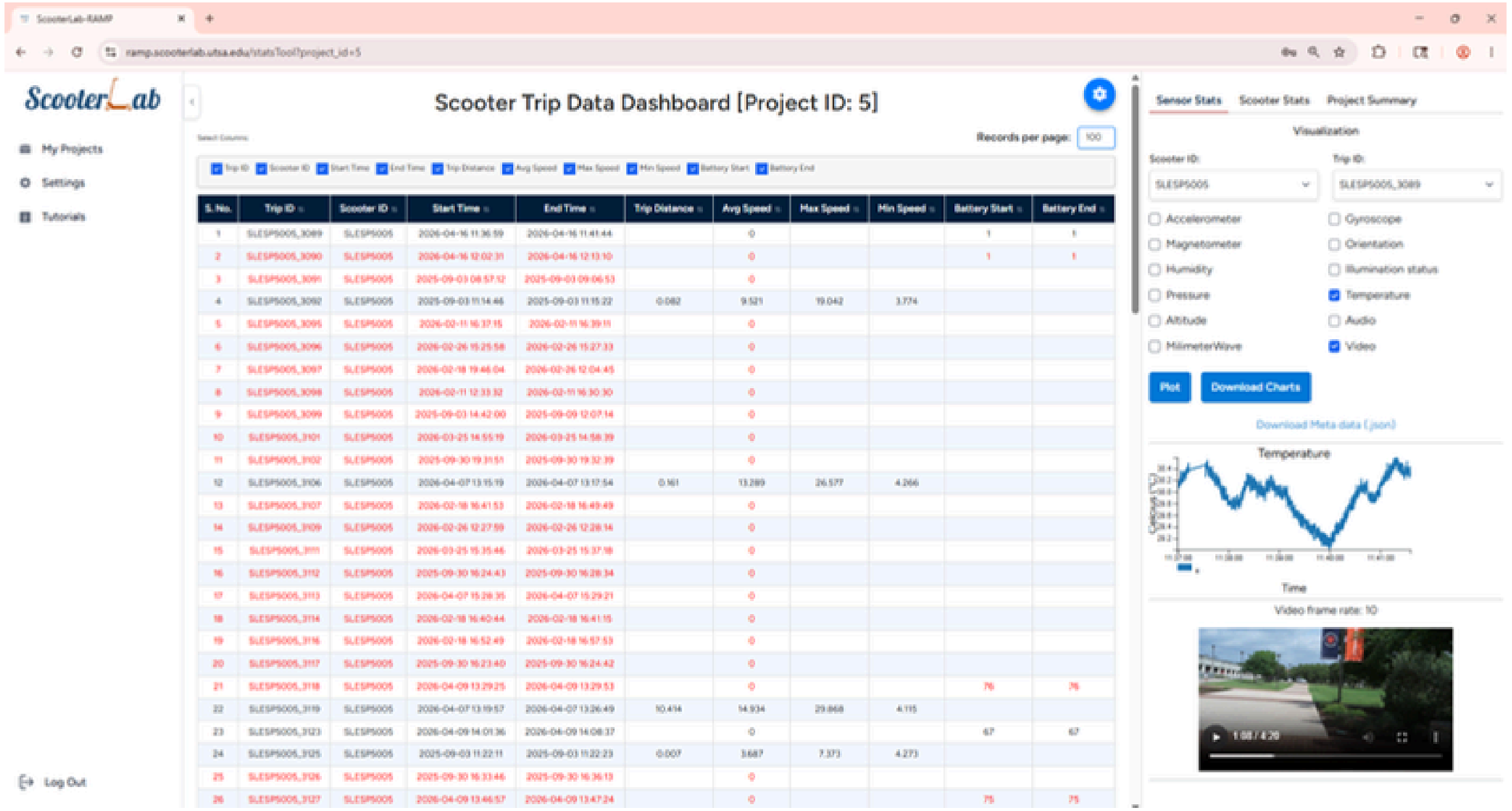
RAMP Dashboard



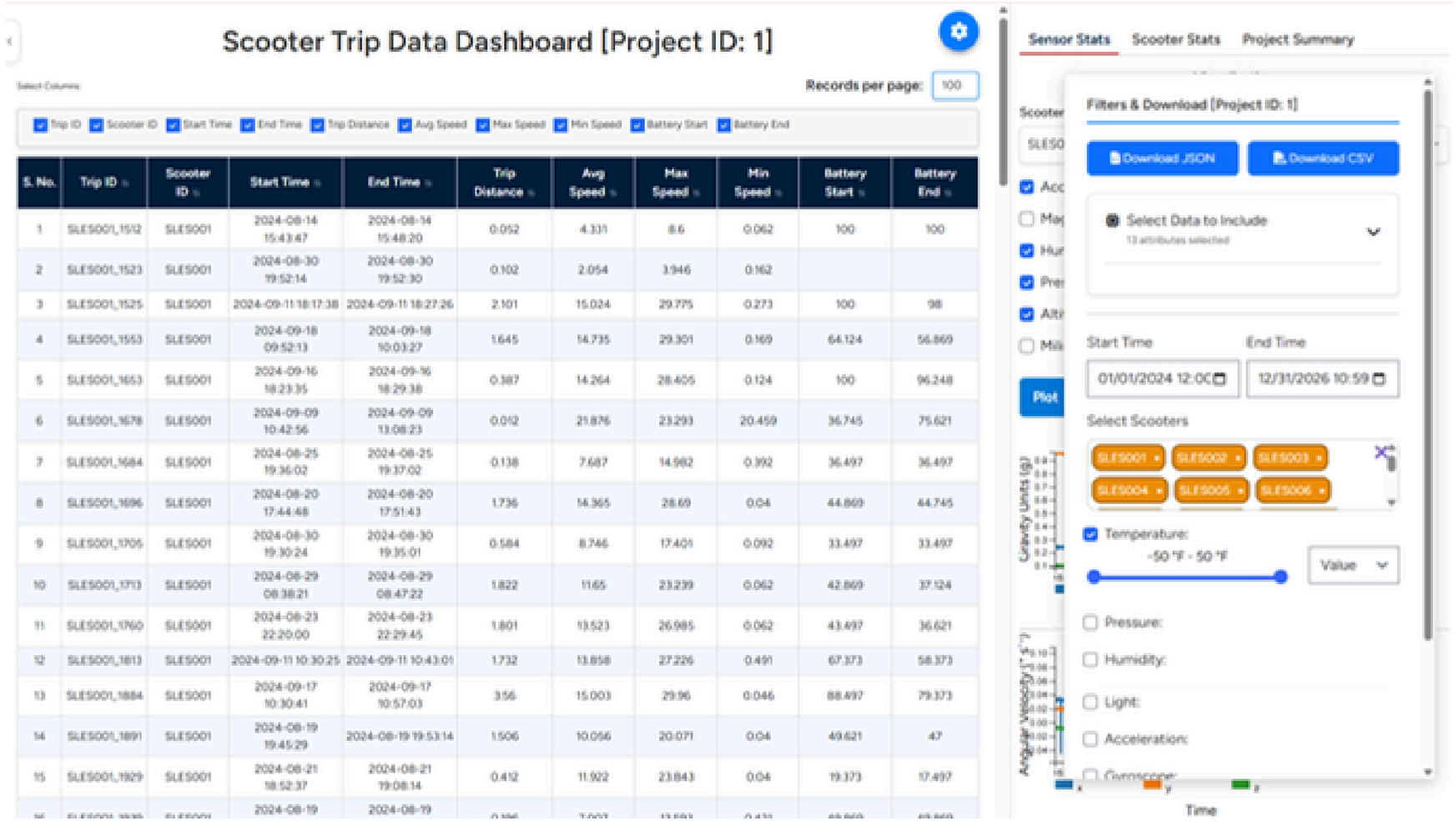
Stats Tool - Loading



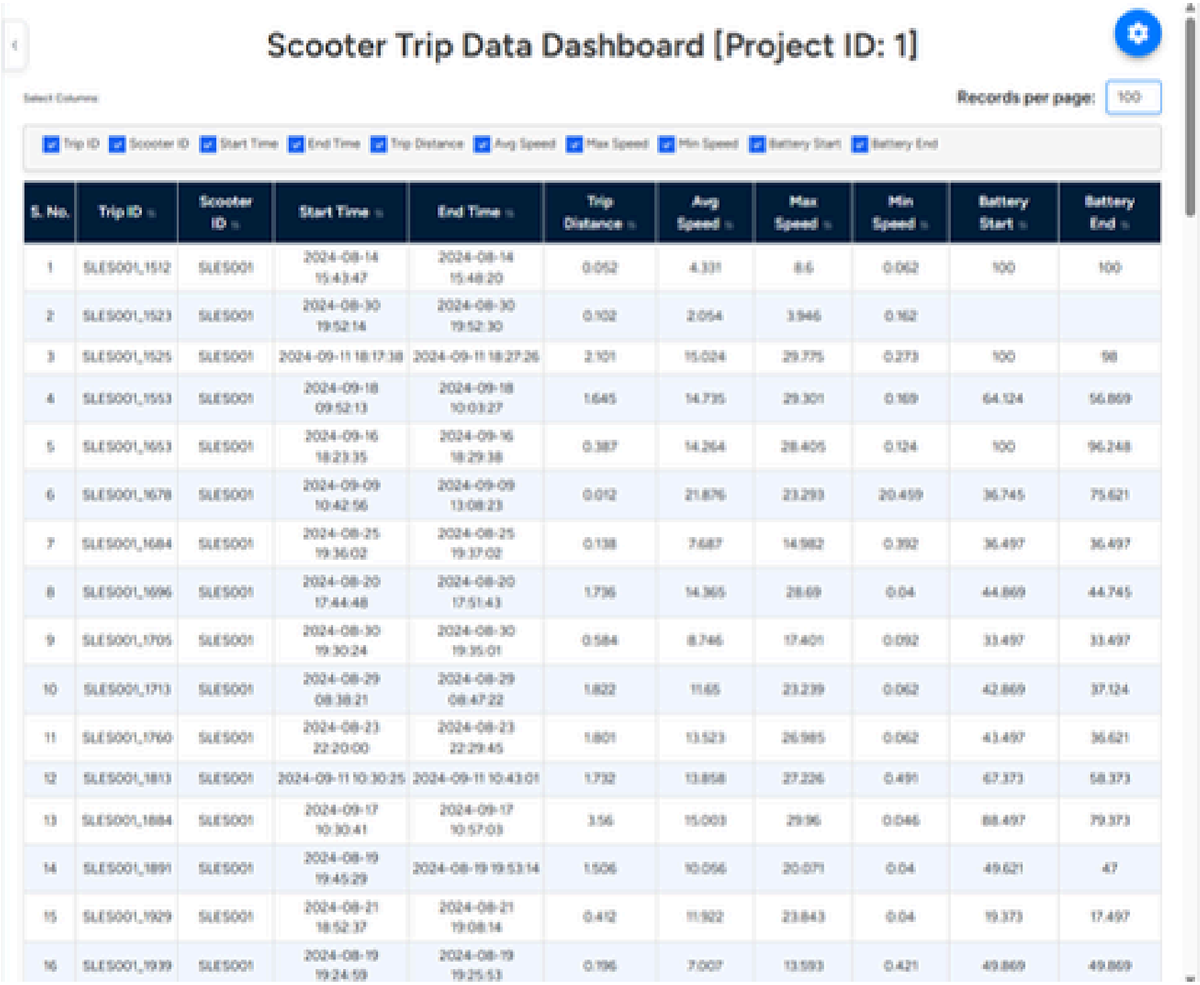
Stats Tool


ScooterLab-RAMP
ramp.scooterlab.utsa.edu/statsTool?project_id=5
ScooterLab
My Projects
Settings
Tutorials
Log Out
Scooter Trip Data Dashboard [Project ID: 5]
Records per page: 100
Sensor Stats
Scooter Stats
Project Summary
Visualization
Scooter ID:
SLESP5005
Trip ID:
SLESP5005_3089
Accelerometer
Gyroscope
Magnetometer
Orientation
Humidity
Illumination status
Pressure
Temperature
Altitude
Audio
MilimeterWave
Video
Plot
Download Charts
Download Meta data (json)
Temperature
Time
Video frame rate: 10

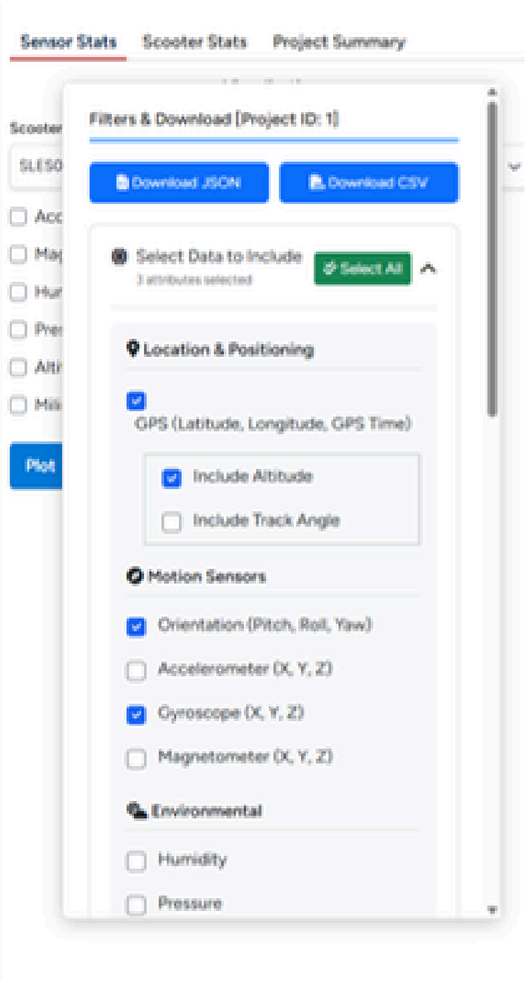
Stats Tool - Filtering



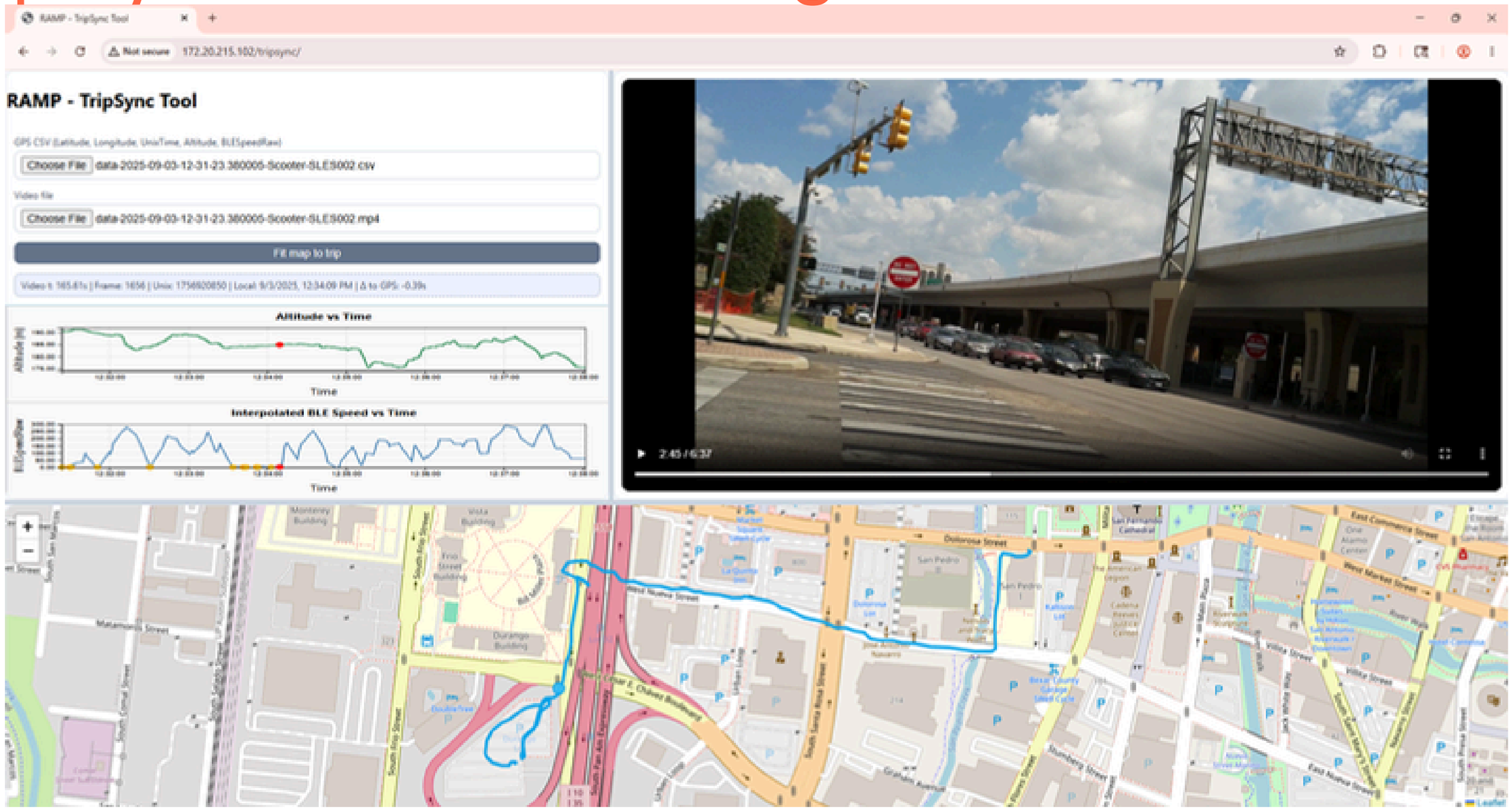
Stats Tool - Data Download



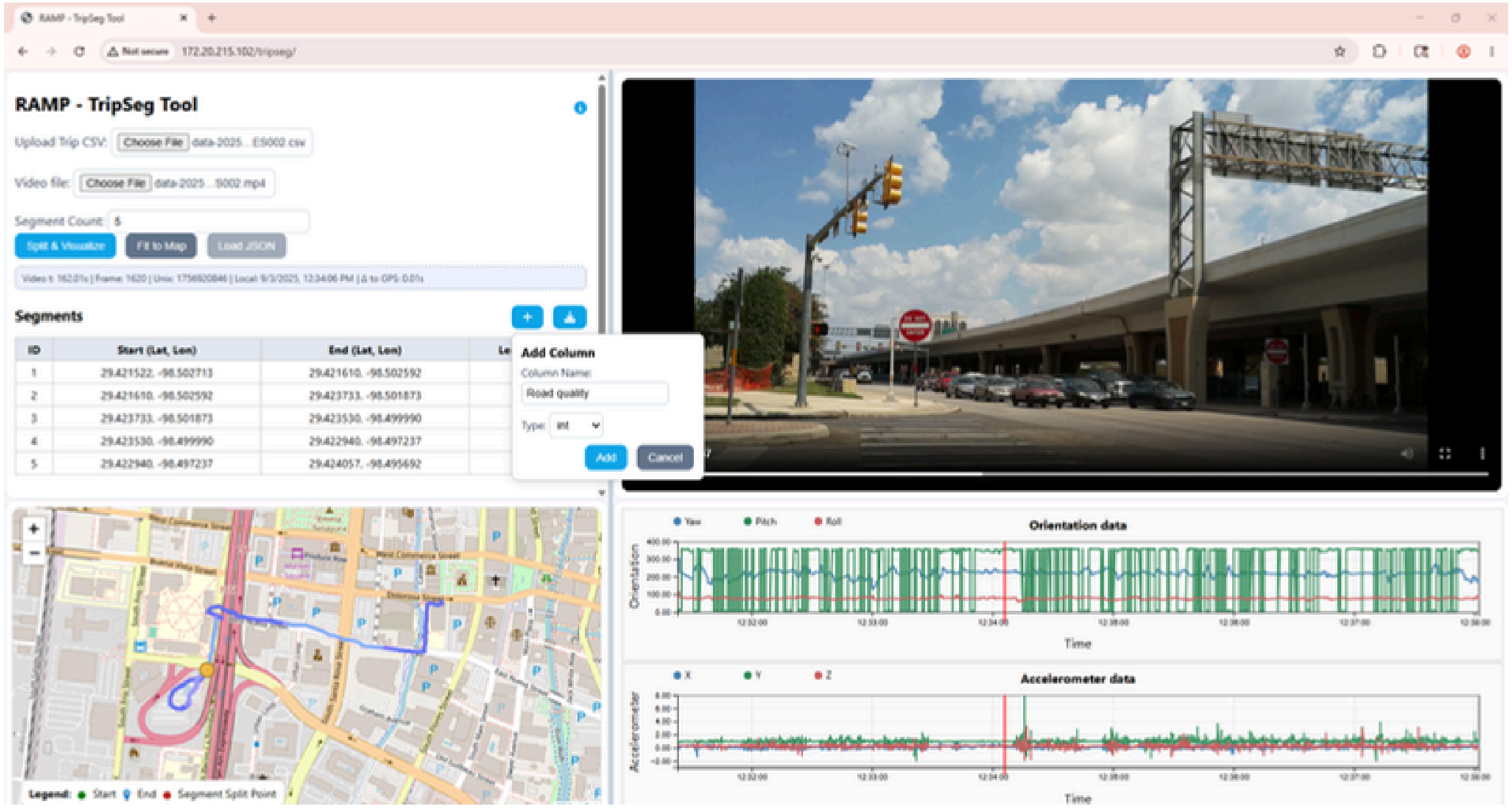
S. No.	Trip ID	Scooter ID	Start Time	End Time	Trip Distance	Avg Speed	Max Speed	Min Speed	Battery Start	Battery End
1	SLES001_1512	SLES001	2024-08-14 15:43:47	2024-08-14 15:48:20	0.052	4.331	8.6	0.062	100	100
2	SLES001_1523	SLES001	2024-08-30 19:52:14	2024-08-30 19:52:30	0.102	2.054	3.946	0.162		
3	SLES001_1525	SLES001	2024-09-11 18:17:38	2024-09-11 18:27:26	2.101	15.024	29.775	0.273	100	98
4	SLES001_1553	SLES001	2024-09-18 09:52:13	2024-09-18 10:03:27	1.645	14.735	29.301	0.169	64.124	56.869
5	SLES001_1653	SLES001	2024-09-16 18:23:35	2024-09-16 18:29:38	0.387	14.264	28.405	0.124	100	96.248
6	SLES001_1678	SLES001	2024-09-09 10:42:56	2024-09-09 13:08:23	0.012	21.876	23.293	20.459	36.745	75.621
7	SLES001_1684	SLES001	2024-08-25 19:36:02	2024-08-25 19:37:02	0.138	7.687	14.982	0.392	36.497	36.497
8	SLES001_1696	SLES001	2024-08-20 17:44:48	2024-08-20 17:51:43	1.736	14.365	28.69	0.04	44.869	44.745
9	SLES001_1705	SLES001	2024-08-30 19:30:24	2024-08-30 19:35:01	0.584	8.746	17.401	0.092	33.497	33.497
10	SLES001_1713	SLES001	2024-08-29 08:38:21	2024-08-29 08:47:22	1.822	11.65	23.239	0.062	42.869	37.124
11	SLES001_1760	SLES001	2024-08-23 22:20:00	2024-08-23 22:29:45	1.801	13.523	26.985	0.062	43.497	36.621
12	SLES001_1813	SLES001	2024-09-11 10:30:25	2024-09-11 10:43:01	1.732	13.858	27.226	0.491	67.373	58.373
13	SLES001_1884	SLES001	2024-09-17 10:30:41	2024-09-17 10:57:03	3.56	15.003	29.96	0.046	88.497	79.373
14	SLES001_1891	SLES001	2024-08-19 19:45:29	2024-08-19 19:53:14	1.506	10.056	20.071	0.04	49.621	47
15	SLES001_1929	SLES001	2024-08-21 18:52:37	2024-08-21 19:08:14	0.412	11.922	23.843	0.04	19.373	17.497
16	SLES001_1939	SLES001	2024-08-19 19:24:59	2024-08-19 19:25:53	0.196	7.007	13.593	0.421	49.869	49.869



TripSync Tool - Coming in Fall



TripSeg Tool - Coming in Fall



Campus Rider Safety Analysis

“Is the current UTSA campus infrastructure ready for coexisting pedestrians and micromobility users?”

Why?

- Shared zones on campus create friction between pedestrians and scooter riders
- Near-miss events and conflicts are hard to quantify without spatial data
- Infrastructure decisions (signage, path widths, speeds) need evidence-based input
- ScooterLab’s testbed provides a controlled, real-world environment to study this

Existing: Cameras

RGB video from the standard ScooterLab sensor array

New: Low-cost LiDAR

An additional depth sensor was installed for this study to capture point cloud data

Study Area

UT San Antonio main campus

Campus Rider Safety Analysis

How RAMP enabled a pedestrian – micromobility conflict study on the UTSA campus

1

New Sensor Setup

- Choose an inexpensive LiDAR Sensor (LD19)
- Mount it on the scooter
- Sensor calibration

2

Data Collection

- Choosing routes
- Design data collection plan

3

Data Download

- Verify data using a pilot data collection
- Stats tool for quick verification
- Full data collection

4

Data Anaylsis

- Analyzing data using tables, plots, etc

5

Results

- Answers to the research questions

RAMP in Action

From field collection to research-ready data in three steps

Locate Trips on Map

Filter rides to UTSA campus area and target data collection dates. Visually confirm the scooter routes that pass through shared pedestrian zones.

Step 01

Preview Camera & LiDAR

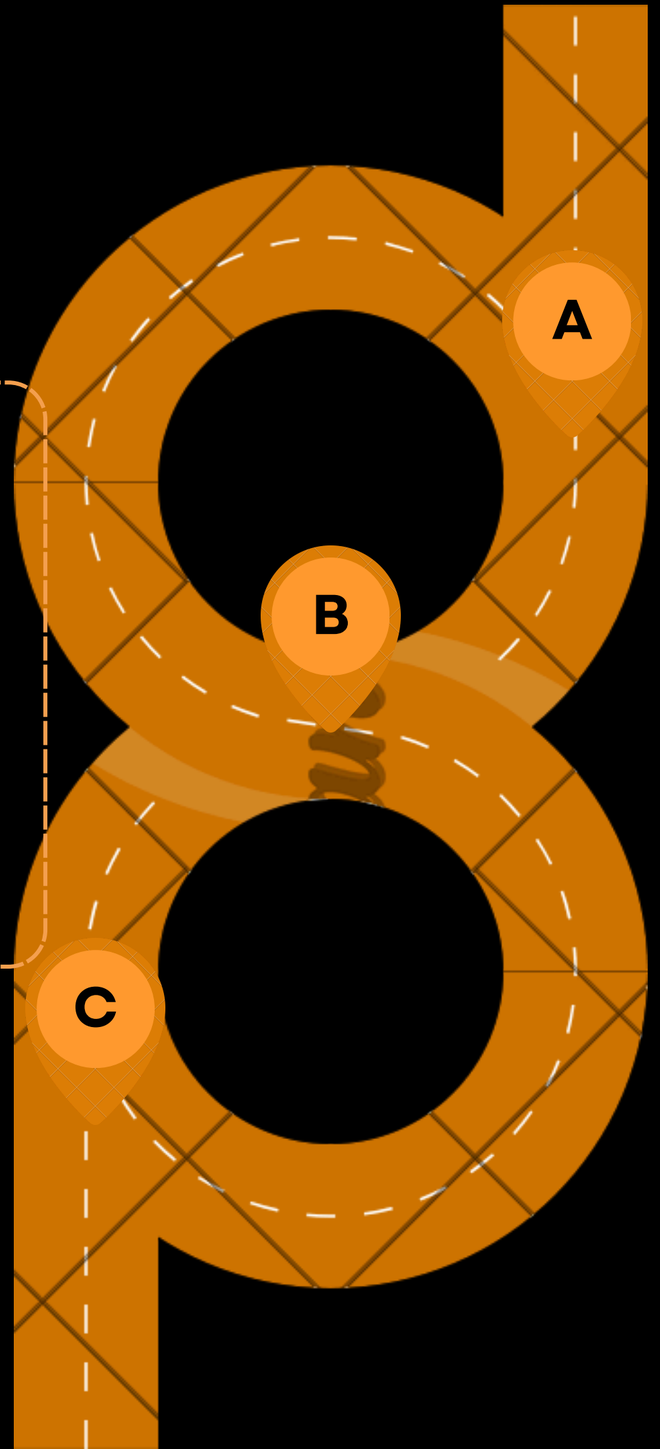
Open individual trips to preview synced camera video and verify LiDAR data streams are present. Confirm data quality before committing to a full download.

Step 02

Mass Data Download

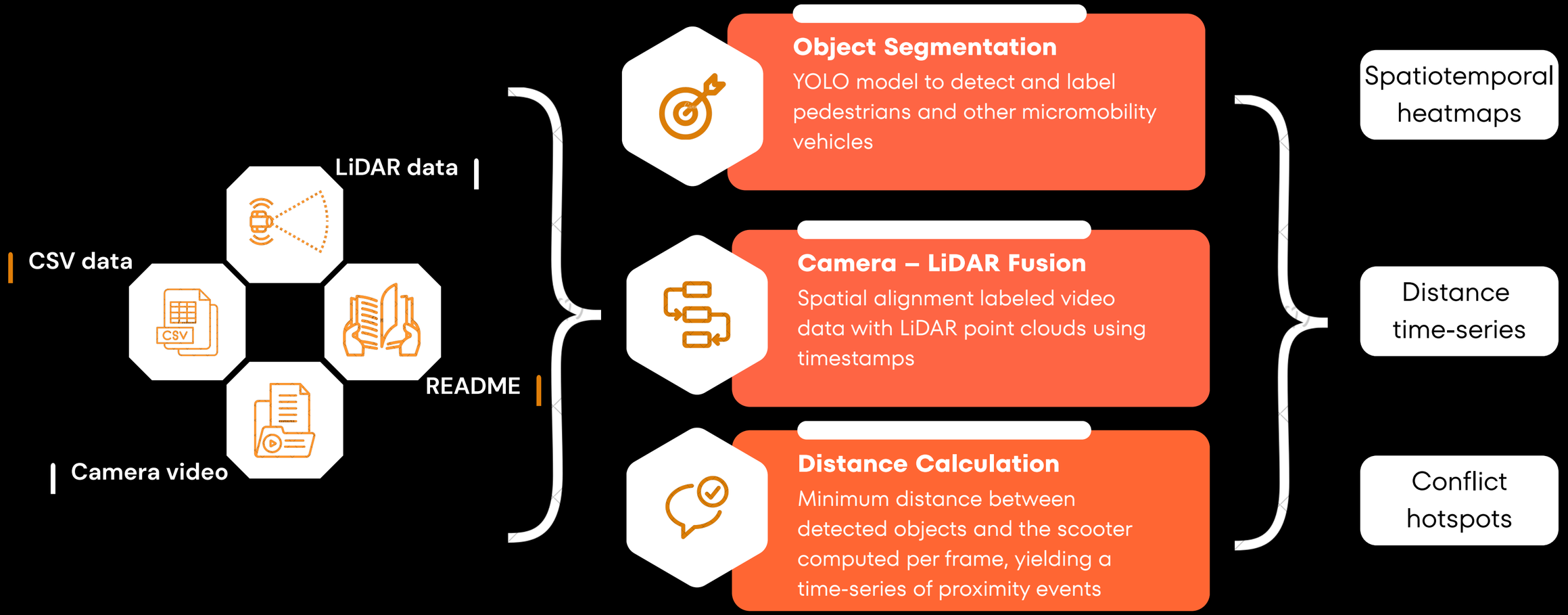
Select camera and LiDAR data streams only. Apply campus area filter. RAMP packages a ZIP with CSV metadata, video files, and LiDAR files, including a README.

Step 03

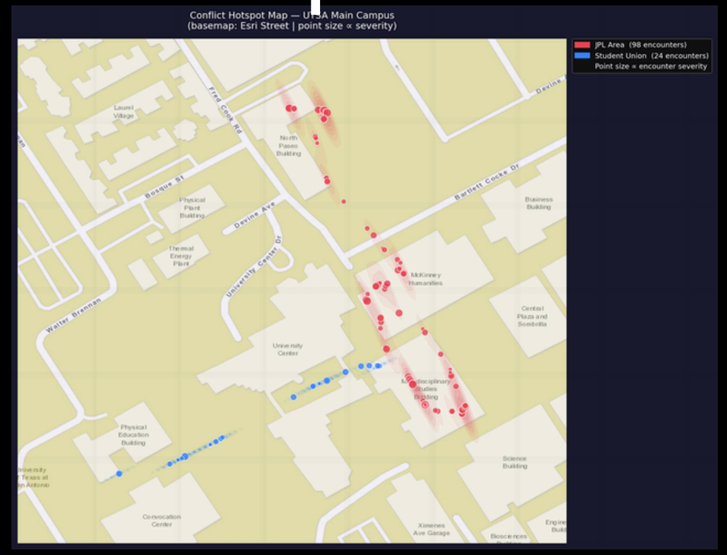


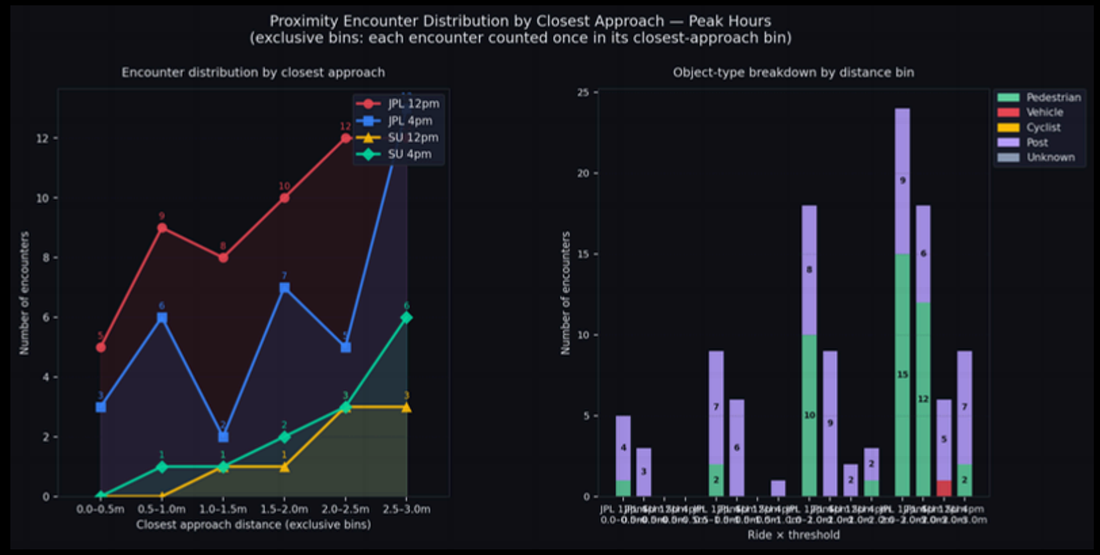
Analysis Pipeline

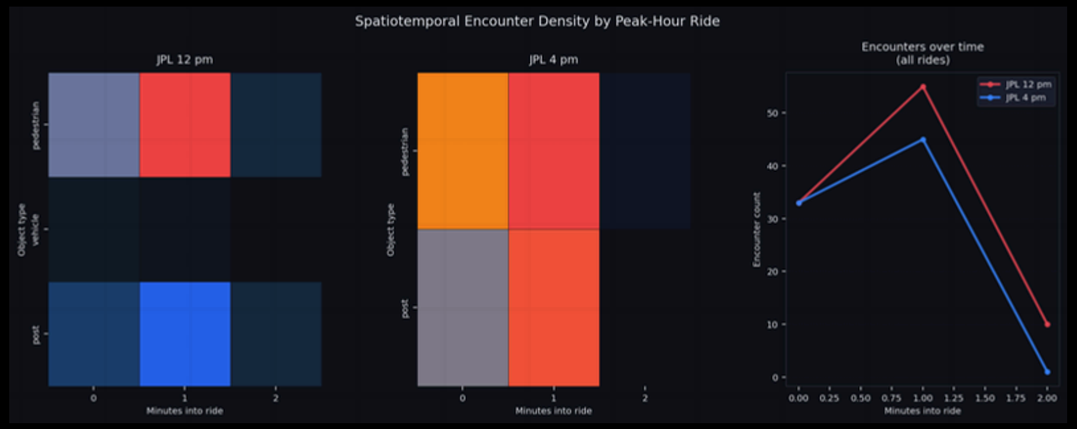
Python scripts applied to the RAMP data package



Analysis Pipeline







Metric	Ride	n	Mean±SD	Median [IQR]	MW p
Distance to object (m)	JPL (Shared)	98	2.63±1.29	2.73 [1.54–3.65]	0.206 ns
Distance to object (m)	Rec Center (Bike Lane)	48	2.38±1.32	2.01 [1.43–3.41]	0.206 ns
Severity score (0–1)	JPL (Shared)	98	0.47±0.26	0.45 [0.27–0.69]	0.206 ns
Severity score (0–1)	Rec Center (Bike Lane)	48	0.52±0.26	0.60 [0.32–0.71]	0.206 ns

Results & What RAMP Made Possible

Expected Outcomes

- High-conflict hotspots identified near the student union and main building crossings, where scooters and pedestrians share paths
- Spatiotemporal heatmaps revealed peak conflict windows
- Micromobility-to-pedestrian proximity events were more frequent in zones without dedicated lane markings

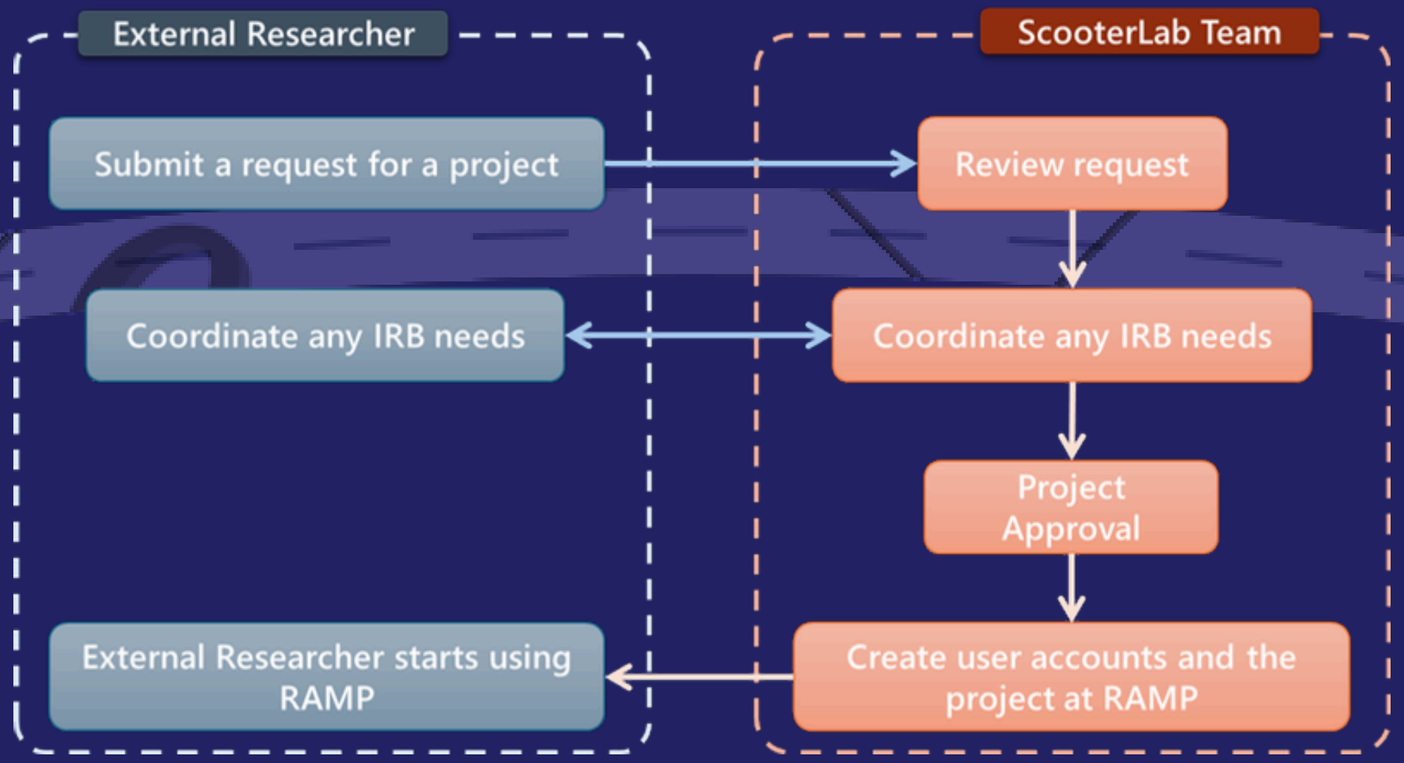
What RAMP Enabled

- **Find data:** Campus-area filter + mass download delivered the exact files needed, no manual digging through raw storage
- **Video preview:** In-browser playback confirmed data quality trip-by-trip before committing to the full download
- **Reproducible:** CSV structured data files made the Python analysis scripts easy to build and re-run for different campus zones

Get Involved with RAMP

Visit scooterlab.utsa.edu/forresearchers

- Project Title
- Research Objectives
- Proposed Use of the ScooterLab Platform
- Research Impact
- Timeline
- Technical Requirements
- Project Team



What's Next

Delivering on our roadmap and looking further ahead

In progress

- Launch TripSync and TripSeg tools
- Additional GeoJSON export formats
- Video & audio post-processing pipeline for sensor footage

Planned

- Compute Tool - let researchers leverage our 4× Nvidia L40S GPUs directly
- Expanded sensor integration from new testbed locations

Exploring

- API access for programmatic data retrieval
- Automated report generation from analysis runs

THANK YOU

Apply for a research collaboration

Visit ScooterLab

https://scooterlab.utsa.edu