

# Welcome Message & Logistics

ScooterLab Workshop 2025 Advancing Research and Collaboration using a Micromobility-supported Sensing and Research Infrastructure

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# What is ScooterLab?

<u>ScooterLab</u> is a community research testbed supported by the National Science Foundation (NSF), designed to advance research in urban mobility, smart city infrastructure, privacy, security, and environmental sensing. By leveraging a fleet of sensor-equipped e-scooters, ScooterLab provides a unique open-access platform for micromobility-supported data collection and experimentation.



### A Close Encounter of the **E-Scooter Kind**

#### The Encounter

Back in 2019, an unexpected run-in with an e-scooter. Not quite a collision, but close enough...

#### "What if these things could do more than just transport people?"

- call?

• What if scooters could become mobile sensors, helping us better understand cities in motion? • What if a community-driven research platform could emerge from something as simple as a close Problem

# Why?



#### Community interest

Privacy, pedestrian safety to urban planning etc.



#### Commercial Providers? Unwilling to share data for research

### ScooterLab was built to fill this gap, enabling customizable, and communitydriven experimentation.





### Lack of sensing infrastructure

Lack of micromobilitysupported sensing infrastrcuture

# Broader Impact



Rider/Pedestrian Safety



Urban Planning & Transportation





#### **Public Policy**



Privacy & Security

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History

# Our Journey

#### 2020

Received NSF CCRI Planning Grant



#### 2021

- Built the 1<sup>st</sup> prototype
- ScooterLab planning community workshops

#### 2023

Received Full Grant: NSF Community Infrastructure for Research in Computer and Information Science and Engineering (CIRC)

#### History

## Our Journey

#### 2024

- ScooterLab initial deployment
- Demo paper at PERCOM 2025



#### 2025

ScooterLab Workshop 2025: Advancing Research and Collaboration using a Micromobility-supported Sensing and Research Infrastructure

#### Next Research collaborations

Our Team

### Meet the PIs



Murtuza Jadliwala Lead PI



Sushil K. Prasad Applications & Data Visualization Lead



#### Greg P. Griffin **Testbed Operations** & Deployment Lead



#### Anindya Maiti **Outreach Coordinator &** Backend Systems Lead



### Postdoctoral Researchers



Raveen Wijewickrama

Vehicle & Sensing Development Lead/ Testbed Manager



#### Buddhi Ashan M.K.

Applications & Data Visualization

Our Team

### Students



Khoi Trinh Backend Systems



Nima Najafian Backend Systems



Ubaidullah Khan Vehicle & Sensing Systems



Christina Duthi Applications & Data Visualization



Alisha Momin Vehicle & Sensing Systems

Two doctoral students Two masters students One undegrad



#### Nazmus Sakib Vehicle & Sensing Systems

Our Team

### Alumni

Jeffrey Jobe MS at UTSA



Nico Molina MS at UTSA



Ahmer Patel MS at UTSA



### Program at a Glance

8:00-9:00AM	Check-In & Breakfast	1:15	5-2:15PM	
8:45-8:50AM	Opening Remarks Fred Martin	2:15	5-3:15PM	
8:50-9.00AM	Welcome Message & Logistics Murtuza Jadliwala	3:15	5-3.30PM	
9:00-10:00AM	Introduction to ScooterLab Raveen Wijewickrama, Buddhi Ashan M.K.	3:30	)-4:30PM	
10:00-10:30AM	Networking & Break		4:15-4:30PM	
10:30-11:00AM	NSF CIRC and MRI Programs Deepankar (Deep) Medhi	4:15		
11:00-12:00PM	Keynote 1: Instrumented Micromobility: Opportunities to get the Most Out of the Best Modes Christopher Cherry	4:30	-5:30PM	
		5:30	)-5:45PM	
12:00-1:15PM	LUNCH BREAK Community Advisory Board (CAB) Meeting (Invite Only)	5:45	5-6:30PM	
		6:30	0-7:30PM	



#### ScooterLab Research Collaboration Talks I

#### Keynote 2: Research Infrastructure: History, Impact, & Experience **Jason Hallstrom**

**Coffee Break & Networking** 

ScooterLab Research Collaboration Talks II

Digital Twin Integrated with Large Language Model (LLM) Agentic Workflow for Urban Modeling Paul Rad

Panel on Micromobility-Supported Sensing

**Concluding Remarks** 

**Posters, Demos & Networking** 

Dinner

### Highlights of the Program

#### Introduction to ScooterLab

Wijewickrama Dr. Buddhi Ashan M.K

#### Keynotes

Keynote 1: Instrumented Micromobility: Opportunities to get the Most Out of the Best Modes (11AM-12PM) - Dr. Christopher Cherry Keynote 2: Research Infrastructure: History, Impact, & Experience (2:15PM-

3:15PM) - Dr. Jason Hallstrom

#### Overview and Vehicle & Sensing Development (9AM-10AM) - Dr. Raveen

#### Your Interface to ScooterLab Data and Research Activities (9AM-10AM) -

### Highlights of the Program

#### **Invited Talks**

NSF CIRC and MRI Programs - Dr. Deepankar (Deep) Medhi for Urban Modeling - Dr. Paul Rad

Panel on Micromobility-Supported Sensing Moderator: Dr. Greg Griffin **Dr. Shunhua Bai**, Texas A&M Transportation Institute **Dr. Janille Smith-Colin**, Southern Methodist University **Dr. Rounag Basu**, Georgia Institute of Technology Dr. Kristen Brown, University of Texas at San Antonio

### Digital Twin Integrated with Large Language Model (LLM) Agentic Workflow

### Highlights of the Program

#### ScooterLab Research Collaboration Talks I

- During Periods of Extreme Heat **Dr. Rounag Basu**
- Multivector Attack Analysis of Location and Trajectory Disruption in
- Wheeled Mobility Analytics Dr. Vaskar Raychoudhury
- **Lopez Ochoa**

#### ScooterLab Research Collaboration Talks II

- for E-Scooters Dr. Subasish Das
- Bai
- Sensing Dr. Xueyin Bai

• Scooting in the Heat: E-Scooters As Sensors and Mobility Enablers Shared Micromobility Platforms - Dr. Mohammad Ashigur Rahman Accessible Path Mapping for All: Leveraging ScooterLab for Multimodal Integrating Heat and Air Quality Data into ScooterLab - Dr. Esteban

SAFERIDE: AI-Powered Rider Behavior Monitoring and Risk Mitigation

 Detect Near-Miss Collisions and Identify Hotspots for Electrified Scooters Using Artificial Intelligence and Sensor Data - Dr. Shunhua

Enhancing Micromobility Safety through Scooter-Based Multimodal

# Acknowledgements

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### **UTSA** Computer Science

### The University of Texas at San Antonio School of Data Science

### The UNIVERSITY of OKLAHOMA

The UTSA AI Consortium for Human Well-Being

# Announcements

Please scan the QR code on the back of your name tag to complete the short post-workshop survey.

A quick heads-up: The building doors lock after 5:00 PM. If you step out and find yourself locked out, one of the staff members will let you in.

