

SAI SRINIVAS TATWIK MEESALA

tatwik<dot>m<dot>19<at>gmail<dot>com |  Sai Srinivas Tatwik Meesala |  Tatwik19

Passionate Robotacist with experience in mobile robots, embedded systems, industrial automation, perception, simulation, and aerial robotics. Builds reliable robotics workflows through modeling, integration, testing, documentation, and cross-functional technical communication.

EXPERIENCE

Arizona State University – Tempe/Mesa, Arizona

Robotics Teaching Assistant

Jan 2023 – May 2024; Jan 2025 – Present

- Instructed robotic systems design with emphasis on kinematics, dynamics, modeling, control, simulation, and debugging.
- Designed labs for autonomy and industrial robotics using ROS 2, Isaac Sim, UAV platforms, digital twin workflows, FANUC/UR5e robots, and sensor-actuator integration.

Teaching Assistant, Industry 4.0 Training – TSMC/P-SMART Partnership

May 2026

- Delivered SACA C-101/C-102 training in Industry 4.0 and industrial automation, covering Allen-Bradley PLCs, Ignition HMI systems, pneumatics, robotics, electrical control, sensor-actuator integration, and semiconductor equipment practices.

Marinella Research – Chandler, Arizona

Robotics Researcher

May 2024 – Dec 2024

- Commissioned, tested, and troubleshot manufacturing equipment during customer deployments, working directly with engineering stakeholders to resolve technical issues.
- Developed visual technical documentation for technicians and contributed technical scopes, feasibility analyses, and project milestones to grant proposals.

Arizona State University – AZNext – Tempe/Mesa, Arizona

Teaching Assistant, Robotics in Microelectronics Manufacturing Training

Aug 2023 – Dec 2023

- Assisted in a semiconductor cleanroom robotics workshop covering equipment constraints, cleanroom and vacuum requirements, robotic motion, system integration, and test procedures.

Naval Science & Technological Laboratory (NSTL) – Visakhapatnam, Andhra Pradesh

Robotics Intern

May 2022 – Aug 2022

- Developed an autonomous ground robot using Jetson, computer vision, GPS navigation, and collision-avoidance logic for field operation.

Audi India – Visakhapatnam, Andhra Pradesh

Mechanical Technician Internship

Mar 2017 – May 2017

- Diagnosed mechanical issues, supported repair workflows, and documented service observations for Audi vehicles.
- Assembled and disassembled vehicle components while following workshop procedures, troubleshooting malfunctions.

EDUCATION

Arizona State University – Mesa/Tempe, Arizona

GPA: 4+

PhD, Robotics and Autonomous Systems

Jan 2025 – Present

Master of Science in Engineering in Robotics and Autonomous Systems

Aug 2022 – May 2024

Bachelor of Science in Engineering in Robotics

Aug 2019 – May 2023

PUBLICATIONS

Articles – Under Review and In Preparation

1. Aouti, R., **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Evaluating Agentic AI Frameworks for Vision-Language-Model-Based Industrial Automation.
2. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Deep Koopman-Based Motion Prediction for Initializing LiDAR Scan Matching in Legged Robot Localization.
3. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Data-Driven Autonomous Underwater Vehicle Control Using Bi-RRT, Koopman-KAN Learning, and Fractional Sliding Mode Control.
4. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Multi-Agent Data-Driven Vehicle Control via KAN Koopman Theory.
5. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Auditable Smart Manufacturing: Kolmogorov–Arnold Oversight and Smart Contract Governance.
6. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Kolmogorov–Arnold Networks Koopman Control of a 6 Degree of Freedom Robot Manipulator.

SKILLS

Code/OS: Python, C, Linux; **Robotics/AI:** ROS 2, Embedded Systems, Computer Vision, SLAM, AI/ML, Isaac Sim, Digital Twins; **Controls:** MATLAB/Simulink, Control Systems, Signal Processing, CAD; **Automation:** Systems Integration, PLC Programming, SCADA/Ignition, Industrial Networking, Industrial IoT.

PROJECTS

Stellantis Industrial Physical AI Robot Demonstrator (ASU x Wandelbots)	Sep 2026 – Present
Developing a dual-UR5e industrial automation demonstrator for a Stellantis Detroit event with Wandelbots; responsible for hardware setup, machine vision, networking, Isaac Sim/Omniverse, end-to-end testing.	
SmartFollower & Tracker: Autonomous Ground Vehicle Following System	Mar 2026 – May 2026
Developed a ROS 2 TurtleBot 4 autonomy stack for object tracking, Kalman/Particle Filter prediction, SLAM mapping, and LiDAR-safe following using RGB-D vision and proportional control.	
Blockchain-Orchestrated Robot–SCADA Integration	Dec 2025
Built an IIoT robot workcell integrating collaborative robots, an edge controller, and SCADA/HMI dashboard with job queues, robot motion execution, completion logging, KPI monitoring, trajectory visualization, and anomaly alerts.	
ArcFold: Inchworm-Inspired Foldable Robot (MuJoCo + Prototype)	Fall 2025
Modeled a foldable rigid-link crawler in MuJoCo and validated compliance, actuator dynamics, and sim-to-real gait tuning against prototype behavior.	
AeroFusion: Autonomous BLIMP UAV (ROS 2 Sensor Fusion + Perception)	Apr 2025
Developed a ROS 2 indoor autonomy stack combining IMU, barometer, and camera data with YOLOv5-based target tracking.	
Robotics Dynamics and Force Control Package	Apr 2024
Developed a robotics software package for manipulator dynamics, force-control algorithms, simulation workflows, graphical analysis, and model-based evaluation.	
VCO₂/VO₂ Metabolic Monitor	Jan 2024 – Apr 2024
Designed and built a VCO ₂ /VO ₂ metabolic monitor with CAD hardware design, embedded software, Bluetooth communication, and real-time data acquisition.	
Mechatronics Device: Portable/Lightweight Gait Analysis	Jan 2023 – May 2023
Developed compact gait-analysis footwear to support balance assessment for patients at the Barrow Institute.	
Semi-Autonomous Twin Hoist System	May 2023 – Aug 2023
Designed a semi-autonomous twin-hoist concept for handling 700 lb copper rolls used in PCB manufacturing.	
Wearable Robotics with Embedded System Control	Jan 2022 – Apr 2022
Developed a sensor-driven embedded control system with Wi-Fi communication for actuator-assisted stroke rehabilitation.	
Industrial Workstation with Programmable Logic Controller	Jan 2022 – Apr 2022
Programmed a Rockwell PLC workstation with industrial sensors, actuators, and SCADA/HMI controls for an SMC HAS-200.	
Interactive Decoration/Animatronics with Embedded System Control	Aug 2021 – Dec 2021
Built an embedded animatronics system with custom PCB design and actuator control.	