Sai Srinivas Tatwik Meesala

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Summary

Passionate Roboticist with expertise in embedded systems, perception, industrial automation, autonomous vehicles, & aerial robotics. Demonstrated leadership in engineering projects, excelling in documentation, CAD design, embedded components, digital twin, & programming. Inspired to reach the pinnacle in robotics with a meticulous approach.

Experience

Arizona State University – Tempe/Mesa, Arizona

Robotics & Applied Linear Algebra Teaching Assistant **Jan 2023 – May 2024 \\ Jan 2025 - Present**

- Instructed robotic systems design, covering kinematics, dynamics, modeling, and control.
- Designed industrial-focused labs integrating environment- and context-aware robotics using LLMs, including training on FANUC and UR5e robots, digital twin workflows, and UAV platforms.
- Assisted in graduate-level linear algebra for engineering.

Arizona State University – TSMC P-SMART Partnership – Tempe/Phoenix, Arizona

Teaching Assistant, SACA C-101/C-102 Industry 4.0 Training **May 2026**

- Taught SACA C-101/C-102 smart automation modules covering Industry 4.0 fundamentals, sensors, pneumatics, electrical control, PLC/HMI, robotics terminology, and semiconductor equipment practices.

Marinella Research – Chandler, Arizona

Robotics Researcher **May 2024 – Dec 2024**

- Lead multidisciplinary research projects in robotics, industrial automation, digital twins, and system engineering.
- Conduct feasibility studies and engineering consulting for industrial applications.
- Develop innovative solutions for commercial viability, emphasizing grant proposals and internal projects.
- Contribute to continuous improvement and technological advancement aligned with organizational goals.

Arizona State University – AZNext – Tempe/Mesa, Arizona

Teaching Assistant, Robotics in Microelectronics Manufacturing Training **Aug 2023 – Dec 2023**

- Assisted in a cleanroom robotics workshop, introducing industrial robotics terminology, cleanroom requirements, vacuum requirements, robotic movements, and test requirements for robotics.

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

Robotics Intern **May 2022 – Aug 2022**

- Developed Object Detection (YOLOv5) Robot with GPS navigation with vision-based collision avoidance.
- Worked on Python programable NVIDIA Jetson Nano JetBot.

Audi India – Visakhapatnam, Andhra Pradesh

Mechanical Technician · Internship **Mar 2017 – May 2017**

- Diagnosed and fixed issues with mechanical components in Audi cars.
- Assembled and disassembled complex parts for repairs and troubleshoot malfunctions.

Education

Arizona State University – Mesa/Tempe, Arizona — GPA: **4.25**

Doctor of Philosophy - 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

Journal Articles – Under Review

1. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Kolmogorov–Arnold Networks Koopman Control of a 6 Degree of Freedom Robot Manipulator: Experimental Validation. *Control Engineering Practice*.
2. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Auditable Smart Manufacturing: Kolmogorov–Arnold Oversight and Smart Contract Governance. *IEEE Transactions on Industrial Informatics*.

Conference Articles – Under Review

1. **Meesala, S.S.T.**, Rahmani, M., & Redkar, S. Multi-Agent Data-Driven Vehicle Control via Kolmogorov–Arnold Koopman Theory. *American Control Conference 2027*.
2. **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. *American Control Conference 2027*.

Skills

CAD Designing, Embedded Systems, Python, C, MATLAB, ROS, Linux, PLC Programming, Digital Twins, Aerial Robotics.

Projects

SmartFollower & Tracker: TurtleBot 4 Autonomous Following System Mar 2026 – May 2026
Developed a ROS 2 TurtleBot 4 system for ArUco-based object tracking, Kalman/Particle Filter prediction, SLAM mapping, and LiDAR-safe autonomous following using OAK-D vision and proportional control.

ArcFold: Inchworm-Inspired Foldable Robot (MuJoCo + Prototype) **Fall 2025**
Modeled and validated a foldable rigid-link crawler in MuJoCo, incorporating compliance/actuator dynamics and sim-to-real gait tuning.

AeroFusion: Autonomous BLIMP UAV (ROS 2 Sensor Fusion + Perception) **Spring 2025**
Developed a ROS 2 indoor autonomy stack with IMU+barometer+camera fusion and YOLOv5-based target tracking.

Robotics Dynamics and Force Control Package **April 2024**
Developed a robotics package integrating manipulator dynamics, force control, and GUI.

VCO2/VO2 Metabolic Monitor **Jan 2024 – Apr 2024**
Designed and built a VCO2/VO2 metabolic monitor, integrating CAD design and embedded/software development with Bluetooth-enabled real-time data acquisition.

Mechatronics Device: Portable/Lightweight Gait Analysis **Jan 2023 – May 2023**
Developed compact and portable footwear for gait analysis to improve gait balance for patients at the Barrow Institute.

Semi-Autonomous Twin Hoist System **Aug 2023 – May 2023**
Designed two independent hoists to pick up and change copper rolls (700lbs) used for PCB manufacturing.

Wearable Robotics with Embedded System Control **Jan 2022 – Apr 2022**
Developed a sensor-driven embedded system with Wi-Fi control for actuator assistance in stroke rehabilitation.

Industrial Workstation with Programmable Logic Controller **Jan 2022 – Apr 2022**
Worked on a Rockwell PLC with industrial sensing technology, and industrial actuators, and developed Supervisory Control and Data Acquisition (SCADA) for the Human-Machine Interface (Machine: SMC HAS 200).

3DoF Robot Arm **Aug 2021 – Dec 2021**
Designed a Bluetooth Robot Arm with an inbuilt Forward/Inverse Kinematics calculator to reach the target location.

Interactive Decoration/Animatronics with Embedded System Control **Aug 2021 – Dec 2021**
Developed a Halloween decoration using embedded systems. In-depth research was done to design a functioning PCBs.

Extracurricular Activities

Winner – HGA Golf Tournament Category – A
Sponsorship of INR 10,00,000 from Tusker Pharma

Runner Up – HGA Golf Tournament Category – A
Participated in IGU-South Zone Golf Championship