

Nikita Sarawgi

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Education

University of Southern California

Master of Science in Computer Science | GPA: 4.0/4.0

Los Angeles, CA

Jan. 2024 – Dec. 2025

Manipal Institute of Technology

Bachelor of Technology in Computer Science and Engineering | Minor in Intelligent Systems | GPA: 3.9/4.0

Manipal, India

Jul. 2016 – Jul. 2020

Experience

GrayMatter Robotics

ROBOTICS AND AI ENGINEER

Los Angeles, CA

Oct. 2025 – Present

- Developed sensor models from controlled 3D scanning experiments to predict scan reliability as a function of sensor-object pose, surface material, sensor settings, and environmental conditions.
- Formulated next-best-view planning as joint optimization of geometric information gain and predicted scan reliability, selecting views that maximize observable surface coverage while avoiding sensing-degraded poses.
- Designed a scene-graph representation for manufacturing cells, modeling parts, fixtures, tools, sensors, and process regions with geometric/semantic state and a typed taxonomy of spatial and process relations.
- Introduced node-level uncertainty and kinematic categories that govern graph update mechanisms and frequencies, maintaining reliable scene state for downstream planning as the environment changes.

Realization of Robotics Systems Lab & SLURM Lab, USC

GRADUATE RESEARCH ASSISTANT | ADVISORS: DR. SATYANDRA K. GUPTA AND DR. DANIEL SEITA

Los Angeles, CA

May 2024 – Sep. 2025

- **STEP [ICRA 2026]:** Developed a preference-conditioned Transformer policy for online 3D bin packing that generalizes across spatial-temporal trade-off objectives at inference time without retraining, reducing operational time by 44% without compromising packing density.
- **Robotic Insertion [AIAA SciTech 2025]:** Developed a sim-to-real EfficientNet-CBAM regressor for relative pose estimation of non-convex peg-hole assemblies, with synthetic pretraining and real-world fine-tuning; integrated with impedance control, achieving 85% insertion success.

Microsoft

SOFTWARE DEVELOPMENT ENGINEER II

Hyderabad, India

Jul. 2020 – Dec. 2023

- Developed a cross-platform Azure VM extension in Go for Windows and Linux, interfacing with kernel-level telemetry to enable sub-minute change tracking while processing 5,000+ concurrent data items with <5% memory usage.
- Designed backend services for Change Tracking and Inventory handling 1.5M+ machine reports daily, with fault-tolerant data synchronization and load balancing across distributed Azure services.
- Developed a GPT-3.5 copilot for Azure Migrate, integrating predictive cost models with Azure OpenAI, LangChain, and Semantic Kernel to estimate workload migration costs.

Boltzmann Labs

RESEARCH INTERN

Bangalore, India

Jan. 2020 – Jul. 2020

- Built and released an open-source Python/PyTorch library unifying drug-target interaction prediction and single-cell RNA-seq analysis, with modules for clustering, imputation, dimensionality reduction, and feature extraction; reached 3,400+ PyPI downloads.

Publications

Preference-Conditioned Reinforcement Learning for Space-Time Efficient Online 3D Bin Packing

Nikita Sarawgi, Omey M. Manyar, Fan Wang, Thinh H. Nguyen, Daniel Seita, Satyandra K. Gupta

IEEE International Conference on Robotics and Automation (ICRA), 2026 [paper]

Autonomous Execution of Insertion Operations in Space Assembly Tasks

Abhay Negi, Nikita Sarawgi, Dhanush Penmetsa, Hantao Ye, Ashtin K. Cheng, Satyandra K. Gupta

AIAA SciTech Forum, 2025 [paper]

Honors

- **Microsoft IDC LLM-Hackathon Winner (2023):** Developed *AI-Customer*, a copilot simulating customer environments for pre-rollout product testing.
- **Growth Mindset Award, Microsoft (2021 & 2022):** Recognized for mentorship and learning agility.
- **Academic Excellence & Gold Medal:** Ranked 5th in the CS Department in the 4th semester of undergraduate study.
- **Merit cum Means Scholarship:** Ranked 296/130,000 in the entrance exam for Manipal Academy of Higher Education.