Saksham Gupta

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Education

International Institute of Information Technology - Hyderabad(IIITH), Jan 2023 – Dec 2024 | Hyderabad, India
MS by Research Electronics and Communication Engineering (Major in Robotics)
CGPA: **9.17/10** | Supervisor: Dr. Spandan Roy

Narsee Monjee Institute of Management Studies(NMIMS), 2016 – 2020 | Mumbai, India
Bachelor Of Technology, Mechatronics Engineering
- **Dean's List Honoree - Student Ambassador Award**

Publications and Patents

S. Gupta, S. Mishra, A. Mittal, A. Ayub, K. Farooque, S. Roy, and B. Gupta, "Bab_Sak Robotic Intubation System (BRIS): A Novel Endotracheal Intubation System with an Integrated Monocular Carinal Measurement Module",, *Under Review (IEEE IROS 2025)*
- **Provisional Patent Application no.** 202311072640

A. Sharma, S. Gupta, S. P. Singh, R. D. Yadav, H. Song, W. Pan, S. Roy, and S. Baldi, "Impedance and Stability Targeted Adaptation for Aerial Manipulator with Unknown Coupling Dynamics,", *Under Review (IEEE IROS 2025)*

S. Gupta, A. Sharma, A. Mulgundkar, R. D. Yadav and S. Roy, "Adaptive Control of Quadrotor under Actuator Loss and Unknown State-dependent Dynamics,", *2024 IEEE 20th International Conference on Automation Science and Engineering (CASE), Bari, Italy, 2024, pp. 717-722, doi: 10.1109/CASE59546.2024.10711418.*

R. D. Yadav, B. Jones, S. Gupta, A. Sharma, J. Sun, J. Zhao, and S. Roy, "An Integrated Approach to Aerial Grasping: Combining a Bistable Gripper with Adaptive Control, *arXiv preprint, Under Review (TMECH)*

Ongoing Research and all the Experimental Videos can be perused at https://guptasaksham.com/projects/

Work Experience

Research Associate, *Robotics Research Center (RRC) - International Institute of Information Technology Hyderabad (IIIT)* Jan 2022 – present | Hyderabad, India
- Applied advanced non-linear control methods to aerial manipulators, continuum robots, and surgical robotic systems, significantly enhancing their operational accuracy, stability, reliability, and fault tolerance.
- Served as **Teaching Assistant** for "Robotics Dynamics and Control" (Fall 2024) and "Advances in Robotics and Control (Nonlinear Control)" (Spring 2024), supporting curriculum creation and delivery and mentoring students.
- Manufactured and commercialized drone-based pollination mechanisms designed explicitly for paddy crops; developed adaptive control strategies for accurate and efficient spraying of Gibberellic acid.
- Fostered collaboration and actively contributed to preparing and submitting research grant proposals.

Sr. Research Associate, *Tambourine Innovation Ventures Inc.* Aug 2020 – present | Vienna, VA, United States
Tambourine Innovation Ventures (TIV) is an innovation advisory and venture acceleration firm. Its clients include the World Bank, OECD, UNIDO, the US Department of Energy (DOE), and US Small Business Administration (SBA).
- Authored detailed research proposals and grant applications on technology commercialization to multiple agencies, institutions, and organizations.
- Conducted comprehensive market readiness analyses, supported prototype development, and assisted in formulation of intellectual property protection and monetization strategies including Freedom to Operate.
- Developed technology commercialization strategies, encompassing startup creation and licensing arrangements.
- Conducted in-depth market research, evaluating royalty comparables, license terms, and VC term sheets.
- Supported SBIR/STTR proposal processes through comprehensive grant writing, budget planning, and commercialization strategy formulation for startups and research institutions.

Research Associate, Feb 2021 – Feb 2023 | New Delhi, India
All India Institute of Medical Science and Indian Council of Medical Research
ICMR, the Indian counterpart of the US National Institutes of Health, funded a project focused on the design and prototyping of an airway management robot under the supervision of an anaesthesiologist.
- Designed and prototyped a continuum robotic system aimed at advanced airway management, intubation, and monocular depth estimation.
- Developed integrated hardware and software control systems for enhanced robotic performance.
- Conducted extensive patent landscape analyses and detailed market research.
- Assisted the Principal Investigator (PI) in preparing techno-commercial reports and other key documentation for diverse stakeholders.

Research Collaborations

Dr. Wei Pan, *Associate Professor, University of Manchester*

Dr. Simone Baldi, *Professor, Southeast University Nanjing*

Dr. Jianguo Zhao, *Associate Professor, Colorado State University*

Key Undergrad Projects

Intelligent Autonomous Vehicle, Aug 2019 – Jun 2020

for IGVC (Intelligent Ground Vehicle Competition), organized by RoboNation

Annual international competition held at Rochester Institute of Technology where multiple teams of multi-disciplinary nature compete to build an autonomous vehicle according to a fixed set of rules to compete on various grounds.

- Led a team of 20+ students; oversaw all major aspects of the product's (robot's) development from manufacturing to electronics to computer programming.
- Developed a fully compliant all-terrain vehicle for autonomous motion tracking; path planning & traversal.

NMIMS Robotics Testbed - 1 (NRT-1), a satellite payload Oct 2019 – Feb 2020

A pilot project to study the behaviour of Magnetic Shape Memory Alloy in space.

- Oranganized by ISRO (the Indian Space Research Organization); under its SpaceShare program - about 8-9 applications were finalized from a pool of thousands of research proposals (which included top Indian Institutes).
- Designed and manufactured a test-bed for a Terfenol-D (magnetostrictive material) in space.
- Lead design & manufacturing of a highly constrained payload (constrained by space, dimensions, weight & scale of components attached).
- Performed various regression & stress tests on the payload - thermovac, vibrations, signal encryption & attenuation in Class 1 clean rooms.

IEEE OES Singapore Autonomous Underwater Vehicle Challenge 2018 & 2019, Jun 2017 – Jul 2019

Team Captain

- Led 12 students in the IEEE OES Annual Robotics Challenge. Designed a modular, component-based AUV system for performing a multitude of tasks - SLAM based navigation & planning; visual identification of key zones/areas in the robot vicinity; acoustics (hydrophones, DVL) based localization & performing various decommissioning tasks with the help of a 6-DOF robotic arm.

Key Highlights

Guest Lecturer, *IIIT Hyderabad* Mar 2024

Guest Lecturer for the Master Trainer Program on "Allied UAS Technologies," organized by IIIT Hyderabad under the Ministry of Electronics and Information Technology-approved project on capacity building in Drone and related technologies

IIIT Hyderabad Research Student Fellowship, Jan 2023

Fellowship to cover tuition fee during Masters program.

GLOBAL RANK 7 & SOCIAL MEDIA AWARD, Mar 2019

at Singapore Autonomous Underwater Vehicle Challenge 2019

- Global Rank 7 out of 57 international teams
- We were the only Indian team to make it into the top 15

GLOBAL RANK 4, *at Singapore Autonomous Underwater Vehicle Challenge 2018* Mar 2018

- Rank 4 out of 45 international teams

Best Usage of MathWorks tools Mar 2017

- Award for "Best Usage of MathWorks tools" at the ABU RoboCon National Robotics Competition in 2017
- Asia Pacific Broadcasting Unit's Robocon robotics competition is organized annually at a national level in India, with 100s of teams participating each year.
- Teams are awarded for their excellence; in our case; for outstanding work carried out in simulations of the robot's control systems.

Technical Skills

Language: Python, C, C++, MATLAB

Tools: Ubuntu, ROS, Gazebo, Solidworks, PX4-SITL, Qground Control, Git, Latex, Ansys

Hardware: Hardware: 3-D Printer, SBCs and Microprocessor Boards, Pixhawk, Realsense Cameras, Optitrack Motion Capture System

References

Prof. Spandan Roy, *Assistant Professor,* IIIT Hyderabad
spandan.roy@iiit.ac.in

Dr.Babita Gupta, *Anaesthetist, Professor,* All India Institute of Medical Science
drbabitagupta@hotmail.com

Prof. Atul B. Wad, *CEO,* Tambourine Innovation Ventures
Atul@tivinc.com

Dr. Lisa Collins, *General Manager,* Tambourine Innovation Ventures Inc. (ex Dean of Saybrook College at Yale University)
lisa@tivinc.com

(More can be provided as needed)