Saksham Gupta (Aspiring to join Ph.D. program in the US)

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Education

Narsee Monjee Institute of Management Studies(NMIMS), 2016 – 2020 | Mumbai, India
Bachelor Of Technology, Mechatronics Engineering

- **Dean's List Honoree - Student Ambassador Award**
- Specialization: Hydraulics and Pneumatics, Additive Manufacturing; Industrial Drives; Virtual Instrumentation; PLC Programming; Product Design & Development; Robotics.

Professional Experience

Research Assistant, *Indian Council of Medical Research* Feb 2021 – present | New Delhi, India

ICMR is the Indian equivalent of the US National Institute of health. ICMR has funded our research, and I am working on designing and prototyping an airway management robot under an anesthetist.

- Designing and prototyping an airway management robot.
- Developing Hardware and Software control systems for the robot.
- Analyzing patent databases; Conducting market research.
- Assisting the PI in the preparation of various techno-commercial reports.

Research Associate, *Tambourine Innovation Ventures Inc.* Jun 2020 – present | Vienna,VA, USA

Tambourine Innovation Ventures (TIV) is an innovation advisory and venture acceleration firm dedicated to poverty alleviation and sustainable growth through technology based economic development. It works with prestigious international clients such as the World Bank, OECD, UNIDO, US Dept of Energy, etc.

- Writing research proposals, and grant applications for multiple agencies, organizations & institutions.
- Analyzing market readiness, Developing prototypes; Analyzing Intellectual Property strategy
- Developing tech transfer strategy for inventions (start-up, licensing, etc.).
- Conducting market research (royalty comparables, license terms, term sheets for VCs)

Projects

Intelligent (Environment Aware) 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.

An open, easily replicable & modular design for a regenerative aqua pump, Jul 2019 – Apr 2020
Final Year Undergraduate Project

An innovative project to design and build non-electric treadle like water pumps that instead of using electricity, generates battery power thus tackling the vexed water-energy-nexus challenge. Donated it to a rural municipal corporation in India.

- Designed an open-hardware system using commercial off the shelf components (COTS); which can be easily replicated at scale.
- Developed a modular water pump - can be connected to any bicycle & used for generating electricity & for pumping water at the same time from a well.
- Achieved a low cost - high ROI (with one-time CAPEX) by designing a product with eco-friendly; readily-available & economic components.

NMIMS Robotics Testbed - 1 (NRT-1), a satellite payload, *Manufacturing Engineer* 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. The project deliverable is a payload; set to launch on an upcoming PSLV rocket (in Q3 2022).
- 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.

Singapore Autonomous Underwater Vehicle Challenge 2018 & 2019, Jun 2017 – Jul 2019
Team Captain

Annual Robotics Challenge organized by the IEEE OES (Oceanic Engineering Society).

- Led a team of 12 students; for designing, manufacturing & building an underwater autonomous vehicle.
- The team won numerous accolades - stood 4th amongst 45 international teams in 2018; stood 7th amongst 57 international teams in 2019; bagged the Social Media Prize in 2019.
- 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.

Student race car with a carbon fiber chassis, *Formula Bharat (India) 2017* Aug 2016 – Jul 2017

National student racing competition (F1-style) where hundreds of national-level teams participate to compete over various grounds.

- The first foray into building intelligent vehicles (products) - developed an understanding of all technical aspects such as racing car vehicle dynamics, aerodynamics, impact attenuation, fatigue testing, designing parts at micro-scale & integrating at the macro (systems engineering), design of exhausts, steering, suspensions, etc.

Soft Robotic Pneumatic Arm,
for Undergraduate Course - Electro Mechanical Workshop Project
- Designed & manufactured a soft robotics gripper that can grab protean shapes.
- Arm was based on a simple bio-mimetic principle - three tentacle based gripping.

Awards

Dean's List - Student Ambassador Award, Aug 2020
Narsee Monjee Institute of Management Studies
- Honored by the university for winning multiple awards for the university & performing collaborative research with national/international institutes

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

Award for "Best Usage of MathWorks tools" at the ABU RoboCon National Robotics Competition in 2017 Mar 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.

Publications

Saksham Gupta, Kashyap Joshi :Assistive Autonomous Electric Vehicle for Disaster Management,
Presented at Springer SmartCom Conference 2021(Published in Springer Lecture Notes: Smart Trends in Computing and Communications)
A powerful intelligent ground vehicle is planned which can perform different errands like recognizing objects and evading the articles self-rulingly and furthermore it can distinguish paths to move whenever needed to ride on a street. The vehicle comprises sensors and cameras to identify objects to evade them and it can likewise move in a predefined way because of the utilization of GPS framework on the vehicle.

Skills

PLC | Computer Aided Design/Manufacturing | Hydraulics & Pneumatics | Solidworks | System Design & Signal Processing

Additive Manufacturing | Microprocessors & Microcontrollers | C++ | Embedded Programming & Troubleshooting

Finite Element Analysis | Underwater Acoustics | ROS (Robot Operating System) | Python

Languages

English, Hindi, Marathi, Sanskrit

Interests

Canvas Painting, Charcoal Sketching, Interior Designing

References (More can be provided as needed)

Dr. Arnoldo Ventura, *CTO*, Tambourine Innovation Ventures Inc.
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Prof. Kashyap Joshi, *Assistant Professor*, NMIMS
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Dr.Babita Gupta, *Anaesthetist, Professor*, All India Institute of Medical Science
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