Sauranil Debarshi

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EDUCATION

Indian Institute of Information Technology Guwahati *Guwahati, India*
Cummulative GPA: 7.39/10.0 August 2015 - May 2019
Junior + Senior year GPA: 8.31/10.0
Bachelor in Technology
Department of Electronics and Communication Engineering

Maharishi Vidya Mandir Silpukhuri *Guwahati, India*
Percentage: 89.0% 2013 - 2015
Senior Secondary School

Delhi Public School ONGC Nazira *Nazira, India*
CGPA: 10.0/10.0 2011 - 2013
Secondary School

RESEARCH INTERESTS

Perception, Motion and Path Planning in Robotics.

RESEARCH EXPERIENCE

Research Assistant August 2019 - Present
Collaborative Robotics Lab (CORAL), IIIT Delhi
Advisor: Dr. P. B. Sujit

- Currently working towards Vision-based UAV landing on a moving target using data from a camera.
- **Improving Multi-UAV Coalition Capability through Battle Damage Assessment (BDA) task and Performance Modeling**: Developed a performance modeling technique that estimates the capability of a UAV to perform a task within a coalition. I also designed a BDA algorithm that allows a UAV to assess the damage done by a coalition on a target. Based on the assessment, a reviewer grades the performance of the coalition.
- **UAV-based Person Re-Identification and Dynamic Image Routing using Wireless Mesh Networking**: Used LOMO and XQDA for on-board person-reidentification using cameras mounted on the UAVs. I wrote an algorithm that allows dynamic routing of camera images such that all the UAVs are in sync with one another.

Research Intern May 2018 - December 2018
Guide: Dr. P. B Sujit, Associate Professor, Dept. of ECE, IIIT Delhi

- **Solving the Shepherding Problem**: Developed control and herding algorithms for both single and multi-shepherd environments to collect and drive a group of agents to a desired location. Simulated and tested the performance of the algorithms on Rviz and ArduPilot rovers.
- **ROSNet: A WMN based Framework using UAVs and Ground Nodes for Disaster Management**: Implemented a wireless mesh network using stationary/mobile ground nodes and UAVs, to be deployed in various disaster scenarios. I designed a centralized software framework based on ROS for effectively relaying information from one node to another. Developed an interactive GUI using python's Dash framework that allows real-time monitoring of the nodes and UAVs.

Undergraduate Thesis January 2018 - April 2019

Guide: Mohd. Mansoor Khan, Lecturer, Dept. of ECE, IIIT Guwahati

- **Low cost, Portable LED-Spectrophotometer for the detection of Glucose, Nitrite and Blood in Urine**: Developed a fully-functional portable spectrophotometer that uses multiple LEDs(IR, UV, and Visible), a Si-pin photodiode and a microcontroller to detect and warn users of the presence of sugar, urinary nitrite and blood in urine, in real-time.

PUBLICATIONS

- Roy, N., **Debarshi, S.**, & Sujit, P. B. (2019). ROSNet: A WMN based Framework Using UAVs and Ground Nodes for Disaster Management. IEEE Journal on Miniaturization for Air and Space Systems. (Submitted)
- **Debarshi, S.**, & Khan, M. M. (2019). Portable and low-cost LED based Spectrophotometer for the Detection of Nitrite in simulated-Urine. IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), 2019. (Accepted)

COURSE PROJECTS

- **EEG-based Male-Female classification using Neural Networks**: Used CNN, Pre-Trained CNN (VGG16) + Trainable LSTM and MLP to classify a EEG-dataset into male and female subjects.

TECHNICAL SKILLS

Computer Languages	Python, C++, MATLAB, C, LaTeX
Framework & Packages	ROS, Gazebo, Rviz, SITL, Dash, Flask
Libraries	scikit-learn, OpenCV, NumPy, rospy
Embedded Boards	Raspberry Pi 3, Arduino Uno

ACADEMIC ACHIEVEMENTS

- Only undergraduate student of the 2015 batch in IIIT-G to be selected for a fully-funded research project scholarship.
- Top three undergraduate researcher in the Dept. of ECE for three consecutive semesters.
- Demonstrated ROSNet on Socialis Impremiere - the student exhibition event at IEEE RO-MAN 2019.
- Secured third state rank in International Olympiad of Mathematics.

RELEVANT COURSES AND PROGRAMS

Robotics Software Engineer Nanodegree (Udacity), Advanced Control Systems, Image Processing, Embedded Systems, Control Systems, Digital Signal Processing, Mathematics II: Linear Algebra and Calculus, Mathematics III: Probability, Digital Design, Signals and System

EXTRA-CIRRUCULAR

- Team Leader of IIIT Guwahati Table Tennis team; Silver Medalist in the 2016 All India Inter-IIIT Sports Competition.
- Part of the Soccer team that won the Silver Medal in the Inter-IIIT Sports Competition 2016.
- Gold Medalist in Table Tennis at the Annual Sports Competition of IIIT Guwahati 2016, 2018, 2019; Silver Medalist in 2017.