

# Puneet Jain

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## Education

### Brigham Young University (BYU)

Masters - Electrical and Computer Engineering

3.56/4.00

[Present]

### Indraprastha Institute of Information Technology, Delhi (IIIT-Delhi)

Bachelors of Technology (with Honours) - Electronics and Communication

CGPA 9.0/10.0

Department Rank: 1 [2013-17]

## Publications

- Rishav Jain, Rohan Tiwari, **Puneet Jain**, Sujit PB, "*Distributed Fault Tolerant and Balanced Multi-Robot Area Partitioning for Coverage Applications*", accepted as a contributed paper in the Proceedings of the 2018 International Conference on Unmanned Aircraft Systems (ICUAS'18)
- Rohan Tiwari, **Puneet Jain**, Sujit Baliyarasimhuni, Sachit Butail and Michael Goodrich, "*Effect of Leader Placement on Robotic Swarm Control*", accepted as a full paper in the Proceedings of the 16th International Conference on Autonomous Agents and Multiagent Systems (AAMAS2017) [% accepted: 26%] [[pdf](#)] [[Received AICTE-INAE Travel Grant](#)]
- Nipun Batra, Manoj Gulati, **Puneet Jain**, Kamin Whitehouse, and Amarjeet Singh, "*Bits and Watts: Improving energy disaggregation performance using power line communication modems*", presented as short (poster) paper at the 1st ACM International Conference on Embedded Systems For Energy-Efficient Buildings (BuildSys' 2014), held in Memphis, USA on 5-6 November, 2014 [Also accepted for presentation in Microsoft Techvista'15] [[pdf](#)]

## Experience

### Research Assistant, [Magicc Lab](#), BYU [Present]

Working on decentralised multi-agent consensus and non-linear control algorithms for UAVs/AUVs, achieving robust communication and self-organisation while tracking multiple targets.

**Advisor:** Dr. Cameron Peterson

### Research & Development Intern, [Zenatix](#) [Summer 2016]

Worked on hardware and firmware design of nRF (radio) based low power temperature sensing device.

**Advisor:** Dr. Amarjeet Singh

### Research Intern, [Emergent and Autonomous Systems Lab](#), IIIT Delhi [Summer 2015]

Worked on analysing the collective behaviour in pill bugs by processing data for varying density of Pill bugs moving in an annular region.

**Advisor:** Dr. Sachit Butail

### Research Intern, [Energy Lab](#), IIIT Delhi [Summer 2014]

Experimentally analysed approaches for Non Intrusive Load Monitoring, including Electromagnetic Interference from SMPS devices and data rate of PLC Modems.

## Projects

### B.Tech Thesis: Frequency Response Analysis of Mosquito Swarming Behaviour

Advisors: Dr. Sachit Butail, Dr. P.B. Sujit

Built a laboratory microcosm at the National Institute of Malaria Research for studying mosquito swarming behaviour. Developed experimental setup for system identification of insect swarming over a marker. Performed frequency domain analysis of marker following behaviour using control-theoretic methods. [[Second prize at IIIT-Delhi Research Showcase Demo Presentation](#); nominated for best B.Tech Thesis; abstract submitted to SIAM DS'19] [[pdf](#)]

### Low power device for Snow Petrel's nest in Antarctica

Device used for detecting temperature in the nests of Snow Petrels (birds found in Antarctica) and their foraging patterns, using Arduino Pro Mini board, temperature and light sensors and a 3D printed enclosure.

### Audio localisation using ENF Signatures

Worked on using the ENF signatures embedded within audio recordings for forensic purpose, as part of the IIIT-Delhi's team for Signal Processing Cup 2016. [[Report](#)]

## Skills

**Languages & Tools:** MATLAB, Python, C, C++, ROS, EagleCAD, SPICE, Verilog, Cadence, SketchUp, 3D Printing

**Hardware:** Arduino, RaspberryPi, Intel Galileo, ESP WiFi boards, nRF (Nordic) radio, Emlid RTK GPS, DJI Matrice 100

## Awards

- All Round Performance Medal in ECE (2013-17), IIIT-Delhi (Best out of the 2013-17 batch of 175 students)
- Best Academic Performance in ECE (2013-17), IIIT-Delhi (Best out of 35 students)
- IIIT Delhi's Dean's list for Academic Excellence in the term 2015-16
- In Top 3 teams: Hackathon at Summer School for IoT by Microsoft Research, Bangalore and IISc Bangalore

## Teaching Assistant

- Design of Control Systems for Fall 2017 (BYU)
  - Introduction to Robotics for Winter 2017 (IIIT-Delhi)
  - Digital VLSI Design for Monsoon 2016 (IIIT-Delhi)
  - Embedded Logic Design for Monsoon 2015 (IIIT-Delhi)
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