

# Pranav Kedia

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## EDUCATION

- **International Institute of Information Technology Bangalore (IIIT Bangalore)** Bangalore, India  
*Integrated Masters in Electronics and Communication; CGPA [Overall: 3.3/4, Master's: 3.83/4]* Aug 2015 - Sep 2020
  - **Courses:** Multi-Agent Systems, Intro to Robotics, Control Theory, Signals and Systems, Signal Processing, Machine Learning, Real Time OS, Device Driver Development and Microprocessors and Microcontrollers.
- **Modern Vidya Niketan Sr. Sec. School** Faridabad, India  
*All India Senior School Certificate Examination ; Percentage: 90.8%* Apr 2013 - Mar 2015

## PUBLICATIONS

- **Pranav Kedia, Madhav Rao,"GenGrid: A Generalised Distributed Experimental Environmental Grid for Swarm Robotics"**, 2021 International Conference on Robotics and Automation (ICRA 2021) (**Under review**)
- Pratyush Nandi, Anubhav Mishra, **Pranav Kedia, Madhav Rao,"Design of a real-time autonomous in-cabin sensory system to detect passenger anomaly"**, 2020 IEEE Intelligent Vehicles Symposium (**IV 2020**), Las Vegas, 2020
- **Pranav Kedia, Pranav Aggarwal, Madhav Rao,"Design and development of an autonomous in-seat passenger state identification in a modern vigilance enabled public transportation system"**, 2019 IEEE International Conference on Vehicular Electronics and Safety (**ICVES 2019**), Cairo, 2019, DOI: 10.1109/ICVES.2019.8906349
- **Pranav Kedia, Aman Yadav,"Crime Mapping and Analysis using GIS: An Indian Perspective"**, Haryana Police Department, 2016, DOI: 10.13140/RG.2.2.11064.14081

## RESEARCH EXPERIENCE

- **Biorobotics Lab @ Freie Universität Berlin** Berlin, Germany  
*Research Assistant* Feb 2021 - Till Date
  - **RoboBee:** Design and Development of a Robot bee platform for mimicking bee wangle dance in a real beehive as a part of the H2020 funded project 'Hiveopolis'.
- **Surgical and Assistive Robotics Lab @ IIIT Bangalore** Bangalore, India  
*Graduate Researcher - Advisor: Prof. Madhav Rao* Jan 2019 - Sep 2020
  - **Bio-Inspired Swarm Robotics:** Investigation in foraging techniques of ants (pheromone based) and other insects; Designing and developing bio-inspired Swarm robotics platform artificially imitating these natural processes of communication and coordination among group of robots.
  - **Passenger safety in public vehicles:** Researching contact and contact less passenger emotion and state identification and classification techniques using Galvanic skin response, pressure response etc, EQ-Radio etc.
- **A.R.M.S. Lab @ Indian Institute of Technology, Bombay** Mumbai, India  
*Research Intern - Advisor: Prof. Arpita Sinha* May 2019 - Jul 2019
  - **Shape Formation with Kilobots:** Investigations in additive and subtractive shape formation algorithms for a swarm of 40 Kilobots. Experiments were carried out in V-REP simulator as well.
  - **Simulation of Kilobots using V-REP and NetLogo:** Tested additive and subtractive shape formation algorithms for Kilobots in a V-REP scene and Netlogo simulation.
  - **Simulation of Mobile Inspection in V-REP:** Worked on simulation of structure inspection using novel path planning strategies on a KUKA YouBot in V-REP
- **Machine Intelligence and Robotics Center @ IIIT Bangalore** Bangalore, India  
*Undergraduate Researcher - Advisor: Prof. Sachit Rao* Jan 2019 - May 2019
  - **LEGO based planar manipulators:** Designed an easily replicable 4 DOF and 2 DOF planar manipulator for testing various trajectory planning algorithms using LEGO® MINDSTORMS® EV3 with EV3Dev distro for better actuator and sensor data access.
- **High Density Electronic Systems Lab @ IIIT Bangalore** Bangalore, India  
*Undergraduate Researcher - Advisor: Prof. Madhav Rao* Jun 2017 - Dec 2018
  - **Beowulf Cluster:** Distributed computing applications of Beowulf cluster of Raspberry pi using Message Passing Interface to estimate timing data with various no. of nodes and networking bottlenecks.
  - **Wearables:** Developed a hand based controller for various peripherals like mouse and keyboard through hand gesture and movement with applications in fields of VR and to help disabled people to communicate with others and is an easy interface to technology.
- **Haryana Police Department** Haryana, India  
*Research Intern - Guide: Dr. Hanif Qureshi, PhD (Commissioner of Police)* Jun 2016 - Jul 2016
  - **Geographic Information System (GIS) for crime analysis:** My work at the Commissioner Office was looking over the available infrastructure and developing low-cost crime mapping and analysis software solution for the Law enforcement agency.

## TEACHING EXPERIENCE

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- **Teaching Assistant - VL853 Advanced ARM Architectures**  
*IIIT Bangalore*

Bangalore, India  
*Fall 2019*

## SKILLS SUMMARY

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- **Languages:** C, C++, Python, Linux scripting, Assembly(ARM)
- **Software Tools:** Git, MATLAB, Octave, ROS (Robot Operating System), OpenCV, freeRTOS, KEIL, GNU Octave, GNU Make, Open MPI, Vim
- **Design Software Tools:** Fusion360, Inkscape, KICAD, Autodesk Eagle
- **Simulation Tools:** Gazebo, V-REP, Netlogo, LTspice, Multisim
- **Embedded Development Platforms:** ARM Cortex M4, STM32F4, MSP432, Raspberry Pi, BeagleBone Black, ATmega328, and Arduino
- **Prototyping:** CAD, 3D Printing(Creality, Ultimaker, and Makerbot), Etched and Printed PCB fabrication(Bantam and Voltera).

## HONORS, AWARDS AND ACHIEVEMENTS

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- Selected for **Huawei Merit Scholarship** from Huawei twice for the year 2016 and 2017
- Selected for the prestigious **University of Bristol International Leadership Programme** 2019
- Top 1% in All India Secondary School Examination (A.I.S.S.E.)
- Honourable Mention at **Intel IOT hackathon** 2016
- Honourable Mention at **ACM ICPC** Regional at Amritapuri and Chennai 2015
- Top 10 teams in the country in **Zeiss Hackathon** 2018
- Selected for Haryana State Talent Search Scholarship from the Government of Haryana
- Top 0.01% in Science, Maths and Computer Olympiads in India
- **Co-founder**, Project Advisor and Deputy Head of Enigma (IIIT Bangalore Student Robotics Club)

## REFERENCES

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**Madhav Rao**, Associate Professor, Program Coordinator and Faculty in-charge-Labs  
IIIT Bangalore  
mr@iiitb.ac.in

**Sachit Rao**, Assistant Professor  
IIIT Bangalore  
sachit@iiitb.ac.in

**Jyotsna Bapat**, Professor and Dean (Faculty)  
IIIT Bangalore  
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