

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 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, pp. 1910-1917, doi: 10.1109/ICRA48506.2021.9561654.
- **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 "Crime Mapping and Analysis using GIS: An Indian Perspective"**, Haryana Police Department, 2016, DOI: 10.13140/RG.2.2.11064.14081

RESEARCH EXPERIENCE

- **Cyber Physical Group @ University of Konstanz** Konstanz, Germany
PhD Researcher - Advisor: Prof. Dr. Heiko Hamann Sep 2023 - Till Date
 - **SailSwarm:** Design and Development of a swarm of autonomous sailboats optimized for long-duration endurance.
- **Biorobotics Lab @ Freie Universität Berlin** Berlin, Germany
Research Assistant - Advisor: Prof. Dr. Tim Landgraf Feb 2021 - Jul 2023
 - **RoboBee:** Design and Development of a Robot bee platform for mimicking bee wangle dance in a real beehive as a part of the EU H2020 funded project 'Hiveopolis'.
 - **Beehive Experiments:** Involved in performing and analysing the interaction and acceptance experiments of the RoboBee with real bees.
 - **Hardware systems:** Also involved in support for hardware systems development (Robotics systems and medical automation systems) in the lab.
- **Surgical and Assistive Robotics Lab @ IIIT Bangalore** Bangalore, India
Graduate Researcher - Advisor: Prof. Dr. 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. Dr. 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. Dr. 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. Dr. 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

- **Teaching Assistant - VL853 Advanced ARM Architectures** Bangalore, India
IIIT Bangalore *Fall 2019*

SKILLS SUMMARY

- **Programming Languages:** C, C++, Python, Linux scripting, Assembly(ARM)
- **Software Tools:** Git, MATLAB, GNU Octave, ROS, OpenCV, freeRTOS, KEIL, 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,ESP32 and Arduino
- **Prototyping:** CAD, 3D Printing(Creality, Anycubic, Ultimaker, and Makerbot), Etched and Printed PCB fabrication(Bantam and Voltera)

LANGUAGES SPOKEN

- **English:** Native or bilingual proficiency (C1)
- **Hindi:** Native or bilingual proficiency(C1)
- **German:** Intermediate proficiency(B1)

HONORS, AWARDS AND ACHIEVEMENTS

- 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

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

Prof. Dr. Tim Landgraf, Junior Professor
 Freie Universität Berlin
 tim.landgraf@fu-berlin.de

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