



# Pranay Mathur

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## WORK EXPERIENCE

May 2019 - Jul 2019

**Research Intern, Council of Scientific & Industrial Research (CSIR)  
Central Electronics Engineering Research Institute, Pilani, India**

Project Title:Autonomous Navigation of Drones using SLAM and  
Object Avoidance using a Depth Camera

Worked on embedded systems, Pixhawk and Arducopter flight  
controller,(Robot Operating System)ROS, Python,Intel Realsense  
D435i Depth Camera and algorithms for autonomous traversal  
and Simultaneous Localisation and Mapping in GPS denied  
environments

**Worked under Dr.S.A Akbar,Chief Scientist CEERI Pilani,  
India**

## EDUCATION

<b>B.E(Hons.)</b> , Electronics and Instrumentation, BITS Pilani, K.K Birla Goa Campus,India	<b>CGPA 8.55</b>	2017-Present
<b>Class 12</b> Army Public School, New Delhi,India	<b>94.8%</b>	2016-2017
<b>Class 10</b> Army Public School, New Delhi,India	<b>CGPA 10</b>	2014-2015

## ADDITIONAL SKILLS

Computer Vision, Digital Image Processing, Microelectronic  
Circuits, Control Systems, Digital Design, Electronic Devices,  
Introduction to Computer Programming, Microprocessors and  
Interfacing, Digital Electronics, Automation, Embedded Systems

ROS(Robot Operating System), Verilog, Digital Design, Raspberry  
Pi, Linux, Cadence Virtuoso, Proteus, Arduino, C, Assembly  
Language, Python, Matlab

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## PROJECTS

### Drone Delivery Using SLAM and Object Avoidance

Embedded Systems, Software Development, Aerial robotics

**May 2019 - Present**

Project selected for funding by Electrical and Electronics Department, BITS Goa

Selected for funding by Sandbox Fabrication Laboratory, BITS Goa

Developing an algorithm for autonomous navigation of drones in GPS denied environments using Simultaneous Localization and Mapping and a depth sensing camera for object avoidance.

Development of custom computer vision algorithms for obstacle avoidance and recognition using Canny edge detection, and binarizing images.

**Faculty Coordinator:** Dr.Sarang C. Dhongdi, Assistant Professor, Dept. of EEE

### Drone Control using Brain Wave Mapping

**Dec 2018 - Present**

Cognition, Aerial Robotics, Electronics

The project was the recipient of the prestigious Prof. Suresh Ramaswamy Memorial Award

Project was selected for funding by Electrical and Electronics Department, BITS Goa

The project used brain wave mapping to ensure that the user could control a drone using just his thoughts. SVM was used for classification and neuro-vestibular feedback along with a Bayesian Filter was used to increase robustness of the prediction.

Worked with Processing3, Python, Emotiv, ROS, mavros and Dronekit

**Faculty Coordinator:** Dr Veeky Baths, Associate Professor, BITS Goa

### Human Machine Teaming

**Jun 2018 - Apr 2019**

Electronics, Aerial Robotics, Brain Computer Interface

Successfully contributed to a completed project allotted by Defence Research and Development Organization, India based on human machine teaming and swarm robotics.

Worked on ROS (Robot Operating System), Python, RotorS and Gazebo

**Faculty Coordinator :** Prof. Neena Goveas, Associate Dean, AUGSD, BITS Goa

### Project Kratos

**Dec 2017-Present**

Development of a mars rover as part of the University Rover Challenge (URC)

Project selected for funding by the Sandbox Fabrication Laboratory, BITS Goa

Worked on the Communication team using ROS for communicating data over Wifi

Worked on setting up Communication Networks using the Ubiquiti Networks Platform. Also worked on automation of processes using ROS and bash scripting in LINUX

**IC Tester - Microprocessors and Interfacing****Jan 2019 - May 2019**

Project completed successfully as part of Microprocessors and Interfacing course

Used 8086 microprocessor to design an IC tester circuit that included simulation in proteus .

**Faculty Coordinator** : Dr.Anupama,Professor, EEE Dept.BITS Goa

**Stabilisation of UAVs using Gyroscope and Accelerometer****Dec 2017-Jun 2018**

Project completed as part of the Aerodynamics Club, BITS Goa

Worked on Arduino Mega 2560 and MPU 6050 gyroscope and accelerometer. Used PID controller implementation to obtain optimized results.

**POSITION OF RESPONSIBILITY**

<b>Teaching Assistantship</b> -Microelectronic Circuits	Jan 2020-Present
<b>Treasurer</b> - Aerodynamics Club BITS Goa	Jul 2019 - Present
<b>Inventory Head</b> - Aerodynamics Club ,BITS Goa	Jun 2018 - Jun 2019
<b>CTE Course Instructor</b> - Introduction to Aerodynamics and Aviation Center for Technical Education, BITS Goa	Aug 2019–Dec,2019

**CERTIFICATIONS**

<b>C programming</b>	CTE,BITS GOA
<b>Computer Vision</b>	Coursera
<b>Data Science</b>	Coursera
<b>Python for Data Science and AI</b>	Coursera
<b>Introduction to Robotics</b>	CTE,BITS GOA

**SCHOLARSHIPS**

<b>ESSA Merit Scholarship</b>	Army Welfare Education Society
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**AWARDS**

<b>Prof. Suresh Ramaswamy Memorial Award</b>	BITSAA International
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**VOLUNTEERING  
EXPERIENCE**

**Registration Coordinator**

Aug 2018-Present

Academic Undergraduate Studies Division  
BITS Pilani,Goa

**RESEARCH  
INTERESTS**

Aerial Robotics, Automation, Computer Vision, Digital Image  
Processing, Path Planning, Brain Computer Interface, Embedded  
Systems

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