

Ayush Gupta

SOPHOMORE · ROBOTICS ENTHUSIAST

Indian Institute Of Technology, Kanpur

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Education

Indian Institute of Technology Kanpur

BACHELOR OF TECHNOLOGY, MECHANICAL ENGINEERING

- Cumulative Grade Point: **9.2/10.0**

Kanpur, India

July 2017 - Present

Research Experience

Team Autonomous Underwater Vehicle, IITK

Software Team Member

FACULTY ADVISOR: PROF. MANGAL KOTHARI

May 2018 - Present

- Implemented a novel preprocessing algorithm to formulate a robust underwater vision pipeline, for object detection in a modular fashion
- Coded parallel nodes running image processing algorithms using OpenCV on the ROS Framework
- Handled state-of-the art hardware, while preparing to participate in underwater robotics competitions, **NIOT-SAVE** and **Singapore SAUVC**

Team Humanoid, IITK

Software Team Member

ROBOTICS CLUB, IIT KANPUR

Dec. 2017 - April 2018

- Worked on a Bipedal Prototype of the humanoid bot, capable of performing statically stable walking
- Implemented the MATLAB simulated **inverse kinematics walking algorithm** based on ZMP criteria on the actual robot using ROS
- Developed a Web Graphical User Interface for debugging and monitoring using ROS Web Bridge Server and JavaScript

Work Experience

New York Office, IIT Kanpur

Backend Software Intern

SUPERVISOR: PROF. MANINDRA AGRAWAL

May 2018 - July 2018

- Worked on Scala with Akka-HTTP for scalable and concurrent multi threading using functional programming
- Documented and compiled the entire collection of backend Application Programming Interfaces using PostMan
- Fixed bugs in the Scala backend, and collaborated using Phabricator, while developing an upcoming social platform

Skills

Robotics Robot Operating System, OpenCV, Arduino, Gazebo (Beginner), Scikit, MATLAB

Web Development REST API, Express, Socket-IO, Bootstrap, HTML5, Mongo, Jekyll, Travis CI

Programming Node.js, C++, Java, Python, Scala, Unity, Git

Languages English, Hindi

Selected Projects

Chat-IITK

Course Project - ESC101

MENTOR: PROF. PUROSHOTTAM KAR

Spring 2018

- Designed and developed a chat application on NodeJS, Express, Socket-IO, and MongoDB
- Implemented real-time chat using Socket-IO with PassportJS for extensively implemented **authentication** and **cookie handling**
- Database management** implemented using MongoDB, and application deployed on Heroku's server

Microsoft Code Fun Do

Academia Accelerator, Microsoft

HACKATHON PARTICIPANT

March 2017

- The application generated summaries of the latest news based on the current trending hashtags on Twitter, using NLTK library and Azure
- Implemented the tweepy library which provided the hashtags as well as the tweets related to them
- Used Natural Language Processing to filter nouns and verbs, and rate words based on their frequency-inverse document frequency value

The Ball Game

Code on Github

3D GAME DESIGNED AND DEVELOPED ON UNITY

January 2014

- Developed a basic platform game on the Game Development Framework Unity using JavaScript, and C# in the 9th grade
- Followed online tutorials and implemented collisions and links in the Unity Game Engine, while developing the game

Honors & Achievements

2017	Top 0.7% in country , Joint Entrance Examination Advanced, 160,000 candidates	India
2017	Top 0.001% in country , Joint Entrance Examination Mains, 1.2 million candidates	India
2016	Top 1% in country , National Standard Examination in Physics	India
2015 & 16	Top 1% in country , National Standard Examination in Astronomy	India

Positions Of Responsibility

IITK Consulting Group

Students' Gymkhana

MEMBER, TECHNICAL TEAM

July 2018 - Present

- Successfully prepared and delivered lecture to the campus community on introductory Machine Learning and Data Science
- Founding member of the Hobby Group, aiming to work on outsourced consulting projects, with emphasis on insights from collected data

Robotics Club, IIT Kanpur

Kanpur, India

SECRETARY

April 2018 - Present

- Volunteered in organizing introductory workshops for interested freshman students across the year
- Managed the club website, prepared content for lectures and helped organising competitions for campus community

Counselling Service, IIT Kanpur

Kanpur, India

ACADEMIC MENTOR AND STUDENT GUIDE

April 2018 - Present

- Assisted five freshmen students in adjusting to the college environment, providing guidance and emotional support
- Took campus level remedial classes for freshman year Mathematics, provided personal tutoring to academically weak students for their courses

Coursework

*: EXCEPTIONAL PERFORMANCE, O: ONGOING, !: NEXT SEMESTER, #: ONLINE AUDIT

- Multi-Variable Calculus
- Linear Algebra and Differential Equations
- Fundamentals Of Computing (*)
- Introduction to Economics
- Partial Differential Equations (o)
- Autonomous Navigation (!)
- Vision Intelligence and Machine Learning, University Of Pennsylvania, edX Courseware (#)(o)

Miscellaneous

Competitive Coder Pursues as hobby, preparing to participate in **ACM-ICPC Online Qualifiers 2018** and **Snackdown 2019**

Budding Researcher Proposed research abstract to **IEEE OES AUV Symposium 2018**, with **Prof. Mangal Kothari** as senior author