Yash **Srivastav**

Senior Undergraduate · Computer Science and Engineering

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Educational Qualifications

Year	Degree	Institution(Board)	CGPA/%
July'17 – June'21 (expected)	B.Tech, ME & Minor in IME	Indian Institute of Technology, Kanpur	9.2/10.0
2017	ISC – XII	City Montessori School, Lucknow (CISCE)	95.5%
2015	ICSE – X	St. Francis' College, Lucknow (CISCE)	95%

Honors and Achievements

2019 **2nd in 15+ teams**, Student AUV Competition (SAVe), organised by **NIOT, Chennai** in 2019 — *Chennai*

2017 **Top 0.7%**, JEE Advanced (amongst 160,000 candidates)

2017 **Top 0.001%**, JEE Main (amongst 1.3 million candidates)

2016 **Top 1%**, National Standard Examination in **Physics** — *India*

2016 **Top 1%**, National Standard Examination in **Chemistry** — *India*

Work Experience

Intelligent Systems Lab

Robotics Intern

Supervisor: Mr. Ravi Prakash, Doctoral Student

April 2019 - Present

- Ported outdated available ROS code to operate on current development platform using ROS Kinetic on Ubuntu 14.04
- Actualized setup for simulation using Rviz and Gazebo for Universal Robots manipulator on a Guardian Robot
- Tweaked the hardware drivers and changed odometry publishers to fix position drift estimated by motor encoders
- Assisted in final aim to create collaborative autonomous robots capable of building walls, extinguishing fires

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

Relevant Coursework

Introduction to Mechanical Design (A∗)
Introduction to Programming (A∗)
Introduction to Solid Mechanics (A)
Fluid Mechanics (A)
Thermodynamics (A)
Introduction to Microeconomics (A)

A∗: Grade for exceptional performance, *i*: In progress, A: grade

Projects

Team AUV-IITK *Software Team Member*

Faculty Advisor: Prof. Mangal Kothari *May 2018 - Present*

- Fused sensor readings from Doppler Velocity Log (DVL) and IMU using an Extended Kalman Filter to estimate odometry
- Created multi-class dataset of labeled underwater photos, trained model and setup real-time inference on Jetson TX2
- Designed a hierarichal state machine for robust autonomous behavior of the vehicle, with failsafes and decision flow
- Extensively used Gazebo, a physics engine to simulate vehicle model in a hydrodynamically realistic environment

Realtime Onboard Dense RGB-D Mapping on UAVs

Mentor: Prof. Mangal Kothari *May 2019 - Present*

- Studied and experimented various techniques related to 3D mapping of environment using monocular and stereo cameras on Jetson TX2
- Evaluated approaches for shortcomings and computational requirements considering its onboard realtime implementation on UAV

Chat-IITK *Course Project - ESC101*

Mentor: Prof. Puroshottam Kar *2nd Semester*

- Designed and developed a chat application on NodeJS, Express, and MongoDB, selected in **12** out of 400+ students
- Implemented real-time chat using Socket-IO with PassportJS for extensively implemented **authentication** and **cookie handling** for session management
- **Database management** implemented using MongoDB, and application deployed online on Heroku's server

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

Mechanical Quadruped *TA202*

Mentor: Prof. Shantanu Bhattacharya *4th Semester*

- Designed and simulated a four-legged assembly that uses Jansen's linkage mechanism to walk using Solidworks
- Made a working model of the same under constraints of size and materials using manufacturing processes such as lathing, milling and drilling

Positions of Responsibility

Team AUV-IITK *Science and Technology Council*

Software Team Lead *April 2019 - Present*

- Spearheading a group of 8 people working on the software of Anahita, planning and implementing technical changes
- Maintaining software stack of Autonomous Vehicle, deployed on Git, developed using ROS, OpenCV and Gazebo

- **Secretary**, *Robotics Club, IIT Kanpur 2018-19*
- **Secretary**, *Consulting Hobby Group, IIT Kanpur 2018-19*
- **Student Guide**, *Counselling Service, 2018-19*
- **Academic Mentor**, *Counselling Service, 2018-19*

Miscellaneous

- **Runners Up** in robotic soccer event *Wild Soccer*, and *Visualise*, in inter-hall competition
- Developed an application which generated summaries of the latest news based on the current trending hashtags on Twitter as **code.fun.do** submission
- Developed basic platform game on game development framework **Unity** using JavaScript C#, updated on Github