

Academic Qualifications

| Year | Degree/Certificate | Institute | CPI/% |
|----------------|--------------------|---------------------------------------|----------|
| 2019 - Present | B.Tech | Indian Institute of Technology Kanpur | 7.0/10.0 |
| 2019 | Class XII (CBSE) | MM Public School Pitampura, Delhi | 93.8% |
| 2017 | Class X (CBSE) | SD Vidya Mandir, Panipat | 10/10 |

Key Projects & Workshops

Modeling Subsurface Mine Detonation | Research Project - SURGE 2021

Mentor: Professor Ishan Sharma, Dep. of Mechanical Engineering | Students-Undergraduate Research Graduate Excellence Program

May'21 - Present

| | |
|----------|--|
| Aim | • Modeling a flail system to trigger and detonate mines wherever buried |
| Tasks | • Analyzing the transfer of stresses from the point of impact of the flail to the location of the buried mine • Performing simulations using LAMMPS and OVITO to study how waves travel through discrete media like soils • To simulate a granular bed, impact it with a flail & analyse the stress transfer through the bed |
| Progress | • Conducted Literature Review on design of flails and force transmission below the surface of soil • Constructed a granular bed of 5000 atoms using LAMMPS input script, simulated settling of atoms under the effect of gravity and currently assessing the Total Kinetic Energy Analysis of the system of atoms |

3D Shape Completion for Autonomous Vehicles | Robotics Club IITK

• Aim: Building a model which predicts the shape of objects, detected through LiDAR data and RGB images
• Implemented semantic segmentation for KITTI semantic dataset using UNET architecture to mask cars only
• Achieved a final precision of 0.9407 on training and 0.9429 on validation after training the UNET model for 25 epochs
• Currently doing Literature Review on Deep Generative Modeling, and implementation of Variational Autoencoders (VAEs)

May'21 - Present

Facial Expression Recognition using ML | Brain and Cognitive Society IITK

• Replicated a paper on CNN study FER with Convolutional Neural Network via a new face cropping & rotation strategy
• Employed data augmentation, image cropping and CNN while working in a team of 9 members
• Achieved a final accuracy of 93.46% and 90.54% on JAFFE and CK+ dataset respectively for 7 classes
• Conducted Literature Review on the current methods of Facial Expression Recognition

May'20 - Jul'20

Work Experience

Sybylline Robotics Private Limited IC IITP | Summer Intern

• Comprehended various basics of ROS2 (Robot Operating System 2), Client Libraries and URDF (Unified Robot Description Format)
• Brainstormed on simulations in Gazebo, Rviz using Nav2 library to perform navigation related actions
• Currently working on simulations and navigation analysis of floor disinfecting and medical delivery robot using Gazebo and Rviz

May'21 - Present

UnchAI | JEE Mentor

• Tutored in UnchaAI, a tech-ed startup by IITK and NITP alumni, which provides a mentorship platform to JEE aspirants
• Mentored JEE aspirants with their PCM doubts, designed a customized time table & metric to track their performance periodically

Sep'20 - Oct'20

Positions of Responsibility

Manager Research Wing | Academics and Career Council IITK

Apr'21 - Present

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|------------|---|
| Leadership | • Led a team of 12 secretaries working towards promoting research culture amongst the students • Guided the team to work as a unit aimed at assisting the Research Community in fulfilling it's needs |
| Initiative | • Introduced Student Spotlight to create more awareness about remote research amidst the global pandemic • Guided a team of 3 secretaries to edit blogs for Student Spotlight on Research Wing's website |
| Impact | • Conducted sessions targeted for UG community to increase interaction with alumni in research community • Successfully hosted InVar sessions (Industry vs Research) to help students explore various career prospects |

Secretary Research Wing | Academics and Career Council IITK

– Approached 15+ startups for internship positions in the field of E-vehicle R&D to help students get internship during lockdown
– Interacted with IITK alumni and documented their research experience in the form of AnC Blogs

Apr'20 - Mar'21

Student Guide | Counselling Service IITK

– Provided guidance and emotional support to a group of six freshers by helping them adjust to college life
– Helped in organizing Orientation (Y20) for 1000+ freshers

Oct'20 - Present

Academic Mentor MTH101/102 | Counselling Service IITK

– Mentored students who have faced difficulty in their freshman year mathematics courses
– Taken academic classes and hall-level doubt clearing sessions for first years

Sep'20 - Present

Relevant Coursework

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|---------------------------------|--|------------------------------|
| Introduction to Economics | Real Analysis and Multivariable Calculus | Linear Algebra & Ordinary DE |
| Thermodynamics | Nature & Properties of Materials | Manufacturing Processes |
| Engineering Graphics and Design | Introduction to Electrical Engineering | Fluid Dynamics |

Technical Skills

- Languages/Libraries: C, C++, JavaScript, Python, Java, Tensorflow, Keras, Numpy, Matplotlib, Pandas, OpenCV, Scipy, Seaborn
- Software & Robotics: Fusion 360, MATLAB, AutoCAD, LAMMPS, OVITO, ROS2, Gazebo, Rviz, Nav2

Extra-Curricular Activities

- Volunteer, Raktarpan IITK (Blood Donation Awareness CLub)
- Volunteered in spreading awareness and busting misconceptions regarding Blood Donation and related topics
- Collaborated with Fine Arts Club, IITK and organized an art competition to promote Blood Donation
- Maintained an art-blog of digital art illustrations made on Procreate; collaborated with Music Club IITK to create artistic covers
- Ranked among the Top 16 players in IITK Scrabble League; participated in Inter IIT Scrabble League 2020
- May'20 - Mar'21