Lakshita Mohanty
Department of Mechanical Engineering

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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   *May'21 - Present*
Mentor: **Professor Ishan Sharma,** *Dep. of Mechanical Engineering* | ***Students-Undergraduate Research Graduate Excellence Program***

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 currectly assessing the **Total Kinetic Energy Analysis** of the **system of atoms**

3D Shape Completion for Autonomous Vehicles | Robotics Club IITK   *May'21 - Present*
- **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)

Facial Expression Recognition using ML | Brain and Cognitive Society IITK   *May'20 - Jul'20*
- 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

Work Experience

Sybylline Robotics Private Limited IC IITP | Summer Intern   *May'21 - Present*
- 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**

UnchAI | JEE Mentor   *Sep'20 - Oct'20*
- 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**

Positions of Responsibility

Manager Research Wing | Academics and Career Council IITK   *Apr'21 - Present*

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   *Apr'20 - Mar'21*
- 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**

Student Guide | Counselling Service IITK   *Oct'20 - Jul'21*
- 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

Academic Mentor MTH101/102 | Counselling Service IITK   *Sep'20 - Jul'21*
- **Mentored students** who have faced difficulty in their freshman year **mathematics courses**
- Taken academic classes and **hall-level doubt clearing sessions** for first years

Relevant Coursework

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)   *May'20 - Mar'21*
  - 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**