

SHIVEN TRIPATHI

Second Year Undergraduate
Department of Electrical Engineering
Indian Institute of Technology, Kanpur

shiven@iitk.ac.in ✉
ShivenTripathi | shiven-tripathi in
+91-9354043254 ☎

Educational Qualifications

Year	Degree	Institution(Board)	CGPA/%
July'19 – June'23 (expected)	B.Tech, EE	Indian Institute of Technology, Kanpur	9.2/10.0
2019	CBSE – XII	Delhi Public School, Greater Noida	93.8%
2017	CBSE – X	Delhi Public School, Greater Noida	10.0/10.0

Scholastic Achievements

- **Top 0.5%**, *JEE-Advanced* (amongst 160,000 candidates)
- **All India Rank 208**, *JEE-Main* (amongst 1.3 million candidates)
- **All India Rank 6**, *UPSEE* (amongst 200,000 candidates)
- **NTSE Scholar, 2017**, **Top 0.07%** to be awarded scholarship by NCERT (from 1 million candidates)
- **KVPY-SX Fellow, 2019**, **Top 1%** to be awarded fellowship by DST, India (from 100,000 candidates)
- **Top 1%**, National Standard Examination in **Physics**, 2019

Research Experience

Object Detection and SLAM in UGV *Research Project*
Under Prof. Nishchal K. Verma Dec. 2020 - Present

- Working with Senior Researchers in IDEA Lab, on a project **sponsored by DRDO** for unmanned ground vehicle.
- Conducted a literature review on various SLAM methods using various sensors like Camera, LIDAR, IMU etc., benchmarking the results on KITTI datasets for Husky Bot.
- Currently working on implementing fusion (Camera+LiDAR) pipeline for object detection with SLAM, using Deep Learning methods.

Team ERA-IITK *Science and Technology Council*
Software Team March 2020 - Present

Team ERA-IITK competes in **IEEE ICRA DJI Robomaster Challenge**, building autonomous ground robots.

- Implemented **object detection and tracking modules** for the armoured bot using traditional CV based techniques and DL methods like YOLO.
- Tested out **RL using DQN agents on pygames** as a proxy to the training of the bot to target and attack enemy bots.
Code at: ShivenTripathi/Deep-RL
- Currently working on **integrating RL Agents and Behavior Trees for optimal decision making** under threat and advantage.

Swachta Mitra *Research Project*
Under Prof. Ashutosh Modi Oct. 2020 - Present

- Working in a team with CSE Senior Year Students to stop littering by building **DL garbage detection and localisation pipelines**.
- Created and annotated **dataset of over 10k images** relevant to littering in Indian landscapes.
- Currently working on establishing baseline performances using standard architectures like R-CNN.

Team Humanoid-IITK *Science and Technology Council*
Software Team Nov 2019 - May 2020

Team Humanoid-IITK competes in **FIRA RoboWorld Cup**, building humanoid robots capable of archery, wrestling etc.

- Implemented **obstacle detection modules** for the Humanoid Robot using **potential field mapping**.
ShivenTripathi/humanoid_ws
- **Worked with OpenCV and ROS** to build efficient nodes solving CV tasks like detection, tracking and depth mapping, used to solve the problem statement of archery.

Relevant Coursework

Fundamentals of Programming (A)	Real Analysis (A)
Data Structures and Algorithm	Linear Algebra and ODEs (A)
Complex Analysis and PDEs (A)	Introduction to Economics
Computational Cognitive Science (i)	Probability and Statistics (i)
Deep Learning (@)	Reinforcement Learning (@)

A: Grade for excellent performance, i: In progress, @: Coursera

Projects

Fashion Intelligence Systems *ShivenTripathi/GriD-Software*
Flipkart GRiD 2.0 July 2020 - Sep. 2020

Finished in **National Top 3** (from over 9k teams)

Implemented Machine Learning model to identify trends in Fashion items and **generate actionable insights on trendiness of products** to build a portfolio.

- Used open sourced MMFashion models to **identify attributes and get features** representative of styles.
- **Built Fashion Vectors** using a priority list obtained from the modified output MMFashion model to get individual trend ranks.
- Applied **dimensionality reduction techniques like tSNE** and then did **clustering using kMeans** to obtain visually distinct style clusters.

Conversational Robot *ShivenTripathi/ConversationalRobot*
Robotics CLub, IIT Kanpur May 2020 - July 2020

- Studied various preliminaries for Natural Language Processing and **implemented GloVe model for generating embeddings** for text.
- Experimented with different **ASR methods and implemented DeepSpeech 2** trained on a limited but augmented dataset consisting of audiobooks.
- Built hybrid pipelines for **response generation using pattern recognising AIML along with Topic Aware Seq2Seq** Deep Learning model.

PETCat, Biomimetics *ShivenTripathi/PETcat-vision*
Robotics CLub, IIT Kanpur May 2020 - July 2020

- Implemented **Face and Emotion Recognition modules** using classic CV approaches combined with CNN architectures.
- Integrated individual modules into ROS nodes for easy deployment and functionality for the robot.

Positions of Responsibility

- **Secretary, Special Interest Group in Machine Learning (SIGML)**
 - Conducted sessions aimed at Student and Faculty Researchers in Machine Learning for discussion of their research problems and cross-pollination of ideas.
- **Coordinator, Debating Society**, competed as part of Institute Debate Team and trained peers in this activity.

Skills

Programming Languages: C++, Python, C
Data Science: Tensorflow, Keras, Scikit, MATLAB
Robotics: ROS, OpenCV, Arduino, Gazebo, Gym
Utilities: LaTeX, Git, Bash, Processing