

Hitesh Kumar

DEEP LEARNING RESEARCHER · COMPUTER VISION

New Delhi, India

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“A healthy mind is an inquisitive mind.”

Education

Delhi Technological University (formerly DCE)

B.TECH. IN MECHANICAL ENGINEERING

Delhi, India

2016- 2020

Skills

Frameworks	OpenCV, Pytorch, Tensorflow, CUDA, Numpy, Matplotlib, FFMPEG, Git
Interests	Machine Learning, Deep learning, Computer vision, Robotics
Sensor/Hardware	ELP USB Cameras, IP Cameras, Nvidia Jetson Series, Raspberry Pi, Arduino, 2D Radar, 4D Radar, 2D Lidar, 3D Lidar, Intel Realsense, IR Sensor, Ultrasonic Sensor, Hall effect Sensor etc.
Platform/Tech	Linux, Docker, Google Cloud, ROS, Nvidia
Programming	C++, Python, Golang
Languages	English, Hindi, Korean

Experience

Euler Motors (EV startup)

New Delhi, India

DEEP LEARNING RESEARCHER - AUTONOMOUS R&D

Aug. 2022 - Present

- Played a pivotal role in **building real-time ADAS** (Advanced driver assistance systems) software in pure C++ to run efficiently on Nvidia's Jetson Nano. Our team implemented features such as a forward and rear collision warning system and an automatic braking system.
- Led efforts in curating raw data and establishing a semi-automatic data annotation system, speeding up team-wide processes and **saving over two days**.
- Trained and optimized lightweight object detection (recognition) and segmentation models for low-latency performance on jetson nano embedded hardware, achieving **model size reduction by over 60% and 50%**, respectively.
- Took initiative in writing and maintaining high-quality, **production-level documented C++ code** (ROS) for the ADAS system. Our collective efforts ensured inference times utilizing GPU computing under 70ms, alert generation at 10Hz, and **brought down hardware costs over 65%**.
- Spearheaded the creation of a model versioning system from scratch, fostering improved model deployment and management practices for the whole team.
- Actively collaborated on building a mono depth estimation model using data sourced from an Intel Realsense-based system.
- Consistently maintained detailed documentation of code and resolved errors, **saving over 10 hours** for my fellow teammates and ensuring smoother project flow.

SynergyLabs (Deeptech startup)

New Delhi, India

DEEP LEARNING RESEARCHER - R&D

July. 2021 - Aug. 2022

- Trained and tailored classification & object detection models (including tracking) using data augmentation, resulting in a **14% increase in model performance**.
- Developed Docker APIs to facilitate model deployment on cloud platforms.
- Designed and implemented an automatic number plate detection pipeline using Python for high GPU computing during inference.
- Developed a Vehicle Detection System from scratch, deployed at highway locations, achieving less than 6% speed error in detection.
- Constructed a data processing pipeline for Oculii 4D radar, enhancing visualization by 30% in a bird-eye perspective.
- Collaborated on an attention-based OCR model for license plates, achieving 95%+ accuracy on standard number plates.

SynergyLabs (Deeptech startup)

New Delhi, India

DEEP LEARNING INTERN - R&D

Feb. 2021 - July. 2022

- Worked closely with the founder** in the development of the “ATCS” product to deploy on 300+ locations.
 - Curated dataset for fine-tuning model like MobilenetV2 & reduced its size to 2MB (by 30%)
 - Communicated and conveyed product functionalities to Clients and improved over feedback within 1 week.
- Debug issues and maintain documentation** of error resolved to save 3+ hours for fellow teammates.
- Developed UI application using PyQt to configure ATCS product to reduce manual configuring effort by 3x.

Extracurricular Activity

Society of Robotics DTU

CORE MEMBER

India

2016 - 2018

- Collaborated with team to build drone using pixhawk and use computer vision human detections from bird eye view.
- Core managing team to organize tech-fest at University level to held competitions like Robosoccer, Robofight etc.
- Gained experience on teaching juniors about fundamentals of computer vision and possible career branches.

InfernoDTU (Project Mars Rover Prototype)

SOFTWARE HEAD (AUTONOMOUS)

India

2018 - 2020

- Lead autonomous department in the tech team with 5+ members in the development autonomous functionalities of Mars Rover Prototype to compete in competitions.
- Used ROS framework both in C++ and Python to enable rover traversing from a remote location.
- Applied traditional computer vision to detect obstacles and avoid collisions using OpenCV.

InfernoDTU (Gokart)

MEMBER

India

2017 - 2018

- Built deep learning CNN model using tensorflow to detect animals on driving road.
- Created pedestrian detection algorithm using OpenCV to run in real time on RaspberryPi 4b.
- Worked and Improved on lane detection algorithm for better performance.

Research Papers

Analytical and Computational Modelling of Go-Kart Powertrains - Hitesh Kumar, Aditya Natu, Kunal

2020 **Mathur**, International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)

Estimation Of Surface Roughness in turning operations using Multivariate Polynomial Regression -

2020 **Hrishabh Jha, Ashutosh Panpalia, Devanshu Suneja, Geetanshu Ashpilya, Hitesh Kumar, and Vijay Gautam**, Advances in Industrial and Production Engineering

Honors & Awards

INTERNATIONAL AWARDS

2018 **Winner in skidpad category**, International Go-Kart Championship (IGC)

India

2018 **Runner up in autocross category**, International Go-Kart Championship (IGC)

India

2019 **7th Place out of 32 International Team**, Indian Rover Challenge

Udupi, Karnataka

Certificates

2022 **Build a Modern Computer from First Principles: From Nand to Tetris - (ongoing)**, Coursera

2022 **Visual Perception for Self-Driving Cars - (ongoing)**, Coursera

2020 **Robotics: Aerial Robotics**, Coursera

2019 **Introduction To Self Driving Cars**, Coursera

2020 **Data Visualization**, Kaggle

2020 **AWS Machine Learning Foundation Course**, Coursera

2022 **Robotics: Perception**, Coursera

2020 **Introduction to Psychology**, Coursera

2019 **Internet History, Technology, and Security**, Coursera

Writing

Personal Blog

WRITER

blog

Jan. 2021 - PRESENT

- Share my perspective to some problems i faced (tech/non-tech) .

Program Committees

2017 **Organizer**, SRDTU - Tech Fest

India

2018 **Software Head**, InfernoDTU

India