# Hitesh **Kumar**

Deep Learning Researcher · Computer Vision

*New Delhi, India*

(+91) 7838024615 | hitesh.kumar61@yahoo.com | www.hitesh.one | hiteshhedwig | hiteshkumar17 | @rnnishard

*"A healthy mind is an inquisitive mind."*

## Education

**Delhi Technological University (formerly DCE)** — *Delhi, India*

Bachelor of Technology in Mechanical Engineering — *2016- 2020*

## Skills

| | |
|---|---|
| **Platform/Tools** | Linux, Docker, Google Cloud, ROS, CMake |
| **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. |
| **Programming Languages** | C++, Python, Golang |
| | English, Hindi, Korean |

## Experience

**Euler Motors (EV startup)** — *New Delhi, India*

Deep Learning Engineer, Computer Vision - 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.
- 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. 2021*

- **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

*India*

Core Member

*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)

*India*

Software Head (Autonomous)

*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)

*India*

Member

*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

2020 **Analytical and Computational Modelling of Go-Kart Powertrains - Hitesh Kumar, Aditya Natu, Kunal Mathur**, International Journal of Mechanical and Production Engineering Research and Development (IJMPERD)

2020 **Estimation Of Surface Roughness in turning operations using Multivariate Polynomial Regression - 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

*blog*

Writer

*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*