



# Praveen Kumar Rajendran

GRADUATE RESEARCHER · COMPUTER VISION · KAIST

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🎓 Scholar

📍 Daejeon, S.Korea

## Summary

I am a Graduate student researcher in Vehicular Intelligence Lab at Korea Advanced Institute of Science and Technology. Currently pursuing M.S. in Future Vehicle Program, advised by Prof. Dongsoo Har. My research interests include deep learning, 3D computer vision and autonomous driving. Before joining KAIST, I worked with SL Lumax and SL Corporation as Automotive Software Engineer. I love cycling. I enjoy videos of 3Blue1Brown and Veritasium.

## Work Experience



**KAIST - Vehicular Intelligence Lab**

GRADUATE STUDENT RESEARCHER

Daejeon, S.Korea

Mar. 2021 - Feb. 2023

- Worked on accident prevention ADAS system using OpenCV, Deep learning, Class activation maps, and Segmentation
- Worked with ROS for the Multi-LiDAR parking robot project.
- Collaborated on PMD path planning and trajectory prediction in heterogeneous traffic.
- Achieved SoTA on relative camera pose estimation problems with deep learning and published at ECCV-Workshop 2022
- Working on GANs for Domain Adaption. Exploring Multi-Object Tracking and Point Cloud Registration/Analysis for further research.

Chennai, India & Gyeongsan,

S.Korea

Nov. 2018 - Feb. 2021



**SL Lumax & SL Corporation**

SOFTWARE ENGINEER

- Part Leader for the Indian software verification Team at SL Corporation.
- Responsible for Software Unit testing (APP+BSP) of Head Lamps LED Driver Module (LDM), Electronic Control Unit (ECU), Integrated Lamp Control Unit (ILCU), Door side Object Detection, Camera Monitoring System, Intelligent battery management system and E-shifters.
- Performed more than 250+ software unit/integration testing projects with the team.
- Professional working knowledge on CodeScroll Controller tester for Unit/Integration testing, VBA, VectorCAST and Source code analysis.
- Preparing test Specification and establishing Traceability between Design requirements and test Specification.
- Interaction with Software Design Engineers, and analyze the issues to fast pace the development and test closure activities.
- Sent to HQ to closely work with developers and test engineers of various countries such as the USA, China, Korea and India.
- Certified ISTQB CTFI by Korean Software Testing Qualifications Board.

Nov. 2017 - Oct. 2018

GRADUATE ENGINEERING TRAINEE - SOFTWARE

- Responsible for SiL Unit Test of LED Driver Module (LDM). In-depth Boundary-Value analysis for safety critical systems (bitwise/absolute)
- Software Verification and validation(QA - Static Analysis, Codescroll Controlled Tester - Dynamic Analysis).
- Familiarity with the Embedded C analysis, scripting, Cadence PCB Training



**Aerobotix**

ROBOTICS AND EMBEDDED SYSTEMS INTERN

Chennai, India

Jan. 2016 - Mar. 2016

- Trained to work with Arduino UNO, Electronics, Sensors, Actuators and Programming microcontrollers.
- Built different robotics applications such as line follower, RC boat, RC hovercraft.
- Hands-on experience on Bluetooth and various modules for navigation.

## Education



**KAIST (World Ranking 20)**

M.S. IN FUTURE VEHICLE PROGRAM

Daejeon, S.Korea

Mar. 2021 - Aug. 2023

- **GPA:** 3.9/4.3  $\approx$  95.55%
- **Subjects:** Artificial Intelligence/Machine Learning, Deep Learning, Computer Vision, Autonomous Vehicle Systems, Intelligent Transportation Systems, WL Analysis, Operating Systems, Scientific Writing



**Udacity**

SELF DRIVING CAR NANODEGREE

Remote

July 2021

- **Term-1 Projects:** Lane detection, Advanced Lane detection, Traffic sign classifier, Behavioral cloning, EKF
- **Term-2 Projects:** Particle filter, Highway driving, PID Controller, System Integration
- Project details and curriculum can be found [here](#)



- **GPA:** 8.1/10  $\approx$  81%
- **Subjects:** Engineering Mathematics, Engineering Graphics, Embedded Systems, Control Systems, Object-Oriented Programming, Circuit Theory, Electrical Machines, Power Electronics

## Skills

<b>Tech</b>	Computer Vision, Deep Learning, Machine Learning, Robotics, Camera Calibration, Embedded Systems, Software Testing, Multi-view Geometry, 3D Reconstruction, Computational Photography, Visual Localization, Generative adversarial networks
<b>Programming</b>	Python, C, MATLAB, C++
<b>Frameworks &amp; Tools</b>	Git, PyTorch, TensorFlow, NumPy, Scikit-Learn, Codescroll Controller Tester, VectorCAST, Pandas, OpenCV, Keras, Matplotlib, openmm, ROS, Linux, VSCode, Jupyter, Anaconda, Docker, LaTeX
<b>Languages</b>	Tamil(Native), English(Professional), Korean(TOPIK 1)

## Honors & Awards

### INTERNATIONAL

2022	<b>Acceptance</b> , Oxford Machine Learning Summer School, University of Oxford & AI for Global Goals	Oxford, U.K
2019	<b>Receipient</b> , KAIST full funding scholarship for Master's program in Future Vehicle	Daejeon, S.Korea
2019	<b>Receipient</b> , Recipient of Udacity Technology Scholarship powered by Bertelsmann for AI Track - Phase 1	Remote
2019	<b>Award</b> , Korea cycling road grand slam given by K-Water for completion of cycling route of 1837KM	Seoul, S.Korea
2019	<b>Position</b> , Selected for a leadership position of Electronics team of 24 people in SL Corporation.	Gyeongsan, S.Korea

### DOMESTIC

2017	<b>Go Green Award</b> , for making an efficient solar vehicle for Asia's largest solar vehicle competition with Team AATHIRI, ESVC - 2017	Bhimavaram, India
2016	<b>Silver Prize</b> , for the Robotics event of PATHFINDER(Line Follower) in the national level technical symposium VISION organized by Anna University	Chennai, India
2013	<b>School Topper</b> , Higher secondary public examination	Mayiladuthurai, India

## Publications

<b>RelMobNet: End-to-end relative camera pose estimation using a robust two-stage training</b>	ECCV Workshop
PRAVEEN KUMAR RAJENDRAN, SUMIT MISHRA, LUIZ FELIPE VECCHIETTI, DONGSOO HAR	2022
<b>Sensing accident-prone features in urban scenes for proactive driving and accident prevention</b>	IEEE ITS (IF:9.5) - Under Review
SUMIT MISHRA, PRAVEEN KUMAR RAJENDRAN, LUIZ FELIPE VECCHIETTI, DONGSOO HAR	2022
<b>Socially acceptable route planning and trajectory behavior analysis of personal mobility device for mobility management with improved sensing</b>	RiTA
SUMIT MISHRA, PRAVEEN KUMAR RAJENDRAN, DONGSOO HAR	2021

## Projects

<b>Capstone Project: Relative Camera Pose Estimation with Deep Learning</b>	Daejeon, S.Korea
CS570 ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING	Dec. 2021
• Achieved SoTA accuracy in Cambridge landmark dataset in comparison to previous deep learning approaches.	
<b>Capstone Project: ADAS for accident Prevention</b>	Daejeon, S.Korea
PD803 PERCEPTION FOR AUTONOMOUS AND CONNECTED VEHICLES	Dec. 2021
• a cost-effective system that has the potential to improve driver attention to accident cues while avoiding slap-dash behaviour at accident hotspot locations. Worked with pandas, PyTorch mmsegmentation, class activation maps and matplotlib extensively.	

## Capstone Project: End-to-End Autonomous Driving

Daejeon, S.Korea

PD551 FUNDAMENTALS OF VEHICLE ELECTRIC SYSTEMS

Dec. 2021

- End-to-End autonomous driving using imitation learning (Inspired by the famous NVIDIA paper) with the data collected from CARLA

## Course Projects: Projective Geometry & Computational Photogrammetry

Daejeon, S.Korea

PD551 PERCEPTION FOR AUTONOMOUS AND CONNECTED VEHICLES

Dec. 2021

- Camera Calibration, 3D Reconstruction in MATLAB

## Course Projects: CNN Analysis, Regularizations, Sequential modelling

Daejeon, S.Korea

AI502 DEEP LEARNING

Jun. 2021

- Deep Convolution Architecture Analysis with multiple optimizers and regularization techniques. Sequential modelling with LSTMs, Transformers, BERT for extractive Q&A.

## Course Projects: Construction of Building Blocks of OS with xv6

Daejeon, S.Korea

EE415 OPERATING SYSTEM

Jun. 2021

- Kernel Threading, Process Scheduler, Nullptr Dereferences and Shared Page Handler, Filesystem Optimization( for small files)

## Electric solar vehicle

Chennai, India

ESVC

Feb. 2017

- Made a Conventional Solar vehicle from scratch at low cost with a team of twenty five members for the Asia's largest solar vehicle championship. Secured 21st place out of 150 teams from all over asia. I was the vice captain of the team. Along with a MPPT Controller project at BHEL advised by Dr. Kevin ark kumar.

## Robotic Arm

Chennai, India

PROJECT AT AEROBOTIX

Mar. 2016

- With the help of flex sensors, various motors and 3D printed objects made a robotic arm which will perform all the actions done by human hand.

## Certifications

Aug. 2022 **Oxford Machine Learning Summer School 2022**, OxML 2022

University of Oxford

Apr. 2022 **Probabilistic Graphical Models - Representation**, Stanford University

Coursera

Jul. 2021 **Self-Driving Car Engineer**, Nanodegree Program

Udacity

Mar. 2020 **TensorFlow - Data and Deployment Specialization**, deeplearning.ai

Coursera

Jan. 2020 **Deep Learning Specialization**, deeplearning.ai

Coursera

Dec. 2019 **Bertelsmann Technology Scholarship Phase 1**, AI Track

Udacity

Dec. 2019 **TensorFlow Developer Professional Certificate**, deeplearning.ai

Coursera

Nov. 2019 **Machine Learning**, Stanford University

Coursera

Oct. 2019 **ISTQB CTFL**, Certification

KSTQB

Feb. 2017 **Student Industry Project**, Solar Power Controller

BHEL, Trichy

May. 2015 **Inplant Training**, Power Stability Control

SAIL, Salem

## Volunteering

### IEEE Sensors Journal

REVIEWER

Oct. 2021 - PRESENT

### Aerobotix

WORKSHOP CO-ORDINATOR

Jan. 2016 - Oct. 2016

## References

### Prof. Dongsoo Har

Associate Professor

KAIST

Cho Chun Shik Graduate School of Mobility

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### Dr. Luiz Felipe Vecchietti

Senior Researcher

Data Science Group - IBS

Center for Mathematical & Computational Sciences

🏠 Daejeon, S.Korea

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