

K Naveen Kumar

PhD Research Scholar, IIT Hyderabad

Address

2-1-63/5, Tandur,
Vikarabad District,
Telangana State,
Pin-501141

Phone

+91 99497 03720
+91 63011 87125

Email Id

cs19m20p000001[at]
iith[dot]ac[dot]in

Links

Portfolio
Linkedin
Github
Research Gate
Google Scholar

Programming Skills

Python, C
Pytorch
Tensorflow
Matlab
TensorRT
JS, JQuery
Android-
Development
PHP

- I am pursuing PhD in the Dept. of Computer Science and Engineering at the Indian Institute of Technology, Hyderabad (IITH)
- I was an **MTech Research Assistant (RA)** in the Visual Learning and Intelligence Lab (**VIGIL**) at IITH in Jan 2019 and worked in “Smart Cities for Emerging Countries Based on Sensing, Network, and Big Data Analysis of Multimodal Regional Transport System (**M2Smart**)” project funded by **JICA/JST, SATREPS**
- My research interests are (a) Explainable AI, Federated learning in Autonomous Vehicle Technology, (b) Exploring Vulnerability, Adversarial Robustness of 2D/3D Deep learning models, (c) Transferability, Generalizability of 2D/3D adversarial attacks
- I aspire to excel in academic research, deployable AI

Education

2020(Jan) - Now	PhD Research Scholar - Computer Science & Engineering CGPA : 9.38/10 (16 credits)	IIT Hyderabad
2019(Jan) - 2019(Dec)	M.Tech(RA) - Computer Science & Engineering CPI : 8.65/10	IIT Hyderabad
2014 - 2018	B.Tech - Computer Science & Engineering CPI : 8.97/10	IIIT Vadodara
2012 - 2014	Twelfth - MPC 97.7%	Sri Chaitanya Junior College, Hyderabad
2011 - 2012	Tenth - SSC GPA : 9.8/10	New Nalanda High School, Tandur

Publications

1. Debaditya Roy, K Naveen Kumar, C. Krishna Mohan, "Defining Traffic States using Spatio-Temporal Traffic Graphs", **IEEE 23rd International Conference on Intelligent Transport Systems (ITSC)**, pp. 1-6, 2020 [[paper link](#)]
2. K Naveen Kumar, C Vishnu, Reshmi Mitra, C. Krishna Mohan, "Black-box Adversarial Attacks in Autonomous Vehicles", **Accepted in IEEE Applied Imagery Pattern Recognition (AIPR) workshop, 2020** [[paper link](#)]
3. K Naveen Kumar, Mitra R., "Resource Allocation for Heterogeneous Cloud Computing Using Weighted Fair-Share Queues", in Proc. **IEEE International Conference on Cloud Computing in Emerging Markets (CCEM)**, pp. 31-38, 2018 [[paper link](#)]
4. K Naveen Kumar, C Vishnu, Reshmi Mitra, C. Krishna Mohan, "E-SimBA: Explainable Sparse Image Black-box Adversarial Attack for Autonomous Vehicles", **Submitted to IEEE Transactions on Image Processing (TIP), Jan 2021 (under review) [IF-9.34]**
5. K Naveen Kumar, Debaditya Roy, Thakur Ashutosh Suman, C Vishnu, C Krishna Mohan, "TSANet: Anticipating Future Traffic States using Traffic Graphs and Transformers", **IEEE Transactions on Intelligent Transport Systems (T-ITS)**, 2021 ([paper under preparation](#)) [[IF-6.3](#)]
6. K Naveen Kumar, Reshmi Mitra, "Policy-based Heterogeneous Resource Backend Manager for IoT-Cloud Continuum", **Journal of Grid Computing (Springer)**, Dec 2020 ([paper under preparation](#)) [[IF-2.8](#)]

Industry Experience

Coursework

Reinforcement-
Learning
Computer Vision
Deep Learning
Pattern Recognition
Machine Learning
Embedded Systems

05/19 - 07/19 **Intern**

[IIT Hyderabad](#)

Worked on read-world challenging problem statement in medical domain called human blood cell detection, classification, counting from microscopic images using deep learning

01/18 - 06/18 **Internship as Innovator**

[TCS-Digital Impact Square](#)

Worked as a data analyst on a developed digitized solution for a social challenge called improving road safety-changing the way we ride by the process of design thinking, innovation

Awards & Achievements

2019

Stood as top 10 finalist in Nvidia AI Hackathon

[Nvidia AI Hackathon](#)

Invited to participate in Nvidia AI hackthon finals 2019 at C-DAC Pune, Maharashtra, India

2019

Selected in IITH-RU Project Based learning program

[IITH-RU Japan](#)

One of the Top 10 selected students under IIT Hyderabad, India and Ritsumeikan University (RU), Japan collaboration program to visit RU Japan and work with Japanese students

2019

Stood 2nd in Hackathon

[IIT Hyderabad](#)

Won second prize in **Kaggle Machine Learning competition** conducted as a part of **Science & Technology Week at IIT Hyderabad (2018-19)**.

2018

Best Research Paper Award

[IEEE CCEM 2018](#)

Research paper got accepted in **IEEE CCEM 2018** out of **50 submissions**. Won **best paper award** and a prize money **20k INR** out of **8 other papers**.

Personal Skills

Mentored (12)
Leadership
Team Management

Certification(s)

Best Paper Award
Sakura RU Japan
Nvidia AI- Hackathon
Internship:TCS-DISQ
Second prize-ML
NN & DL
Android App Devel.
CS with Android
Intro. to IOT
FAEA Workshop

Funded Projects

08/20 - 01/21

iV4V (Intelligent Voice for Vision) - An intelligent and reliable audio assistance for visual impairment using AI

[Bold and Unique Ideas Leading to](#)

[Development \(BUILD\) IIT Hyderabad](#)

Design and Development of AI based real-time light-weight priority audio alert system (smart glasses) for visually impaired funded by **IIT Hyderabad** – Rs. 1 lakh for 6 months (Aug 2020 – Jan 2021)

Role - Principal Investigator(PI), Project Lead

01/19 - Till date **M2Smart**

[IIT Hyderabad - JICA & JST SATREPS](#)

Smart Cities for Emerging Countries Based on Sensing, Network, and Big Data Analysis of Multimodal Regional Transport System (M2Smart) Funded by JICA / JST SATREPS – 5 years (May 2017 - April 2022)

Role - Team Leader

Developed Dataset(s) EyeOnTraffic(EoT)

Academic Projects

- 01/19 - Till date **IITH Smart Parking System** [IIT Hyderabad - M2Smart\(JICA & JST\)](#)
Developed an AI based smart solution for IIT parking system and is under deployment stage
- 08/19 - 09/19 **Priority based audio alert system for visually impaired using pixel segmented data** [Nvidia AI Hackathon 2019](#)
Developed an AI based software solution for the visually impairment in the finals of Nvidia AI Hackathon 2019
- 08/19 - 03/20 **Collision warning in autonomous vehicles using 3D spatial information** [IIT Hyderabad](#)
Working on novel approach for collision warning in autonomous vehicles using 360° camera data
- 01/17 - 05/17 **Orientation and distance calculation of helmetless motorcycle riders using 3D spatial information** [IIT Hyderabad](#)
Developed a solution to detect incoming and outgoing helmetless motorcycles along with distance from camera
- 01/19 - 06/19 **Traffic segmentation, Vehicle detection** [IIT Hyderabad - M2Smart\(JICA/JST\)](#)
Currently working on a collaborative project of IITH, JICA/JST
- 05/19 - 07/19 **Human blood cell detection, classification, counting** [IIT Hyderabad](#)
Worked on real world challenging dataset comprising of human blood cell to develop an AI solution for generating final bloodcell count report

Other Skills

- 08/15-08/16 **ART Club Secretary** [IIIT Vadodara](#)
Organized events held in college
- 08/09-08/11 **Senior Cadet in NCC** [New Nalanda High School](#)
Done volunteer Services
- 08/16-Now **Realistic Portrait Sketching**
Sketch-IFY, NK_Xplore
- Languages**
English: professional proficiency
Telugu: native
Hindi: conversational