Dhinesh Kumar R

AI Engineer, OOStudios AI, India

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Education

Vellore Institute of Technology   October 2021 – July 2025
PhD in Edge AI based Context Aware QoS improvement for V2X Communications   *Vellore, India*

University of Surrey   September 2017 – September 2018
Master of Science in Mobile and Satellite Communication   *Guildford, UK*

Anna University   September 2012 – June 2016
Bachelors of Engineering in Electronic and Communication Engineering   *Chennai, India*

Technical/Programming Skills

Languages: Python, MATLAB, C, R Programming, SQL
Developer Tools: VS Code, Eclipse, Google Cloud Platform, AWS, NETSIM, NS3, OMNET++, Tableau, R Studio, Pycharm, Microsoft Azure, Kaggle, TensorFlow, Android Studio, Advanced Excel, Micro-Python, Thonny, Jenkins, GitHub
Technologies/Frameworks: Tensorflow, Pytorch, LLM, RL, NLP, ITS, 3GPP, C-V2X, 5G, IEEE 802.11 protocols, ETSI
Hardware Experience: Jetson Nano, Raspberry Pi, Coral TPU, Arduino, Jetson Xavier NX, Jetson Pegasus, Lidar, Intel Real-Sense Camera, Spectrum Analyser.

Domain Experience

- Beyond 5G
- LLM & NLP
- Machine Learning
- Deep Learning
- Agent Based Learning
- Edge/Cloud Tech
- N2N Communications
- Embedded Systems

Patents

- System for Adaptive Resource Allocation for Enhancing Quality of Service in a Vehicular Communication Networks. - **Application Number**: 202341076465, **Status**: Published.
- Wireless Edge Computing-Based Adaptive Traffic Control System with Real-Time Vehicle Tracking and Cloud Integration - **Application Number**: 202311079549, **Status**: Published.
- System for Optimizing Unmanned Aerial Vehicle (UAV) Deployment and Operation in dynamic Vehicular Networks - **Application Number**: 202541005441, **Status**: Published.

Work Experience

OO Studios AI   June 2025 – Present
AI Engineer   *TamilNadu, India*

- Designing and developing cutting-edge software solutions for Text-to-Speech (TTS) models using Deep Learning (DL) and Natural Language Processing (NLP) techniques.
- Working with AWS services like Polly, SageMaker, Lambda, and S3 to deploy and manage AI models in a cloud environment.
- Developing pipelines for data processing, model training, and evaluation for the custom developed Voice Cloning (VC) and TTS Frameworks. Optimizing the models for low latency and high performance on cloud and edge devices.

University of Petroleum and Energy Studies   August 2024 – June 2025
Assistant Professor - School of Computer Sciences (Research)   *Dehradun, India*

- Designing and developing cutting-edge software solutions for optimizing large-scale, data-driven simulations. Spearheaded multi-disciplinary research projects involving Machine Learning, AI-based modeling, and computational frameworks. Leading research collaborations with startup partners "Parimitra - https://www.parimitra.in/" for IoT systems, and smart city initiatives.

- Collaborating with government bodies and industry stakeholders to drive innovation in smart infrastructure, and IoT projects. Led the integration of advanced computational models with real-world industrial applications, focusing on solutions that meet both regulatory standards and market demands.

Autonomous Vehicle Research Lab (AVRL), VIT   October 2021 – August 2024
Research Associate   *Vellore, India*

- Framing up the End-to-End test bed for the C-V2X communications. Major works in 1. Predictive Spectrum Splicing 2. Edge AI Computing 3. AI-assisted Clustering Intelligence 4. Developing Agent based Learning algorithms.
- Work assignments include: - Extensive software development - Simulation/Execution - Preparation of Research Articles.
- Collaborating with the scientists, industry professionals, researchers for research collaborations, writing research proposals and bringing outcomes in terms of patent and research articles.

iHUB DivyaSampark, Indian Institute of Technology (IIT)   February 2023 – June 2023
Visiting Research Intern   *Roorkee, India*

- Project lead in the design, development, and implementation of the T-CPS for Intelligent Mobility and Efficient Traffic Control in Smart Cities.
- Design, development and deployment of the ATCS algorithms with the integration of Edge Computing technology utilizing Jetson Xavier NX Module and AWS.
- Design and development of pre-emption of emergency vehicles utilizing Google API, Android Studio and Max Pressure algorithms.

Mirabilis Design Inc.   June 2020 – August 2020
Wireless Development Engineer   *Chennai, India*

- Design and development of 5G - End-to-End (E2E) physical layer architecture to analyze throughput and latency with 3GPP specifications. Backend software developer for the development of VisualSim library blocks.
- Trainer for VisualSim libraries and 5G system models to US and Asian clients.

Sree Raghavendra Engineering Services   May 2019 – February 2020
Junior Engineer   *Chennai, India*

- Logic programming and data analysis for energy management systems. Preparation of project documentation based on system studies and fault analysis.

Defence Space and Technology Laboratory (DSTL)   December 2017 – March 2019
Project Student   *Portsmouth, UK*

- Design and development of Blind Classification of various Modulation and Channel Coding Schemes using Deep Learning Techniques.
- Extensive work includes software development, research, modelling, real-time testing and project expo.

Wipro Technologies Limited   June 2016 – July 2017
Project Engineer   *Chennai, India*

- Software development, Root Cause Analysis, Agile workflow, Database Management, System Integration Testing and Regression Testing.
- Automation Testing and Project Management.

Research-Driven Prototype Development

QoS aware V2V communication using Multi-Agent Learning Models | *Python, TensorFlow*   **Ongoing**

- Design and Development of testbed featuring a fully distributed multi-agent reinforcement learning framework. This framework will facilitate context-aware adaptive resource allocation schemes for ultra-Reliable and Low Latency V2X Communication (uRLLC) and uRLLC for Cell Intersection (uRLLC-CI). Furthermore, an Edge AI-based demand and supply strategy will be implemented to efficiently manage resources between infrastructures and non terrestrial networks during unanticipated QoS deterioration, infrastructure malfunctions, Non-Line of Sight (NLOS) conditions.

AI-based Real Time ATCS using Edge Computing | *Python, Jetson NX, AWS*   **April 2023 - Jan 2024**

- Design, configure, and implement an edge module capable of real-time video processing using a customized computer vision algorithm for accurate vehicle detection, classification, and counting at traffic intersections.
- Develop a comprehensive system that establishes seamless wireless communication between the edge module and a cloud-based platform, allowing the cloud to analyze vehicle counts and determine adaptive traffic signal timings, which are then sent back in real-time to control traffic lamps at the edge for responsive and dynamic traffic management.
- AWS is configured for data storage using Relational Database Server (RDS) and written the script for the signal timing computation using Max Pressure Control and Reinforcement Learning (RL) algorithms in cloud.

T-CPS for Intelligent Mobility and Efficient ATCS in Smart Cities |*Python*   **Feb 2023-April 2023**

- Design and development of a fully wireless Adaptive Traffic Control Systems (ATCS) utilizing a microprocessor and micro-controller and real time traffic lights and tested in lab.
- Developed an adaptive algorithm to switch the traffic LED's based on the real time vehicle attributes (collected via crowd sourced data [TomTom server]), also developed a mechanism for preemptive system for emergency vehicles.
- Developed the strategy for fail safe mechanism, if there is a hardware failure or communication interruption.

Blind Classification of Modulation and Channel Coding using AI | *MATLAB*   **Dec 2017-May 2019**

- Design and development of Multi-layer Perceptron (MLP) with back-propagation algorithm for recognition of various modulation and channel coding schemes in the presence of Additive White Gaussian Noise (AWGN) in channel fading constraints with the Signal Noise Ratio (SNR) ranging from -1dB to 10dB.

International/National Conferences

- **Dhinesh Kumar R**, Shubham Sahu, Siddhant Semwal, Dhruvi Gaira, Prabhat Mishra, Rammohan A, "Edge-Enabled Smart Traffic Surveillance System with Federated Learning Approaches." 4th IEEE International Conference on Sensors and Related Networks (SENNET). (2025).(India). (Status: Accepted)

- **Dhinesh Kumar R**, Rajvardhan Singh Bhadauriya, Kumar Animesh Shekhar, Pratham Jain, Medha Vaid, Rammohan A, "Leveraging Emotional Intelligence Metrics and NLP-Driven Sentiment Analysis for Predictive Workplace Mental Health Monitoring." 4th IEEE International Conference on Sensors and Related Networks (SENNET). (2025).(India). (Status: Accepted)

- **Dhinesh Kumar R**, Rammohan A, Hafiz Husnain Raza Sherazi, Zubair Khan, "Performance Analysis of Next-Generation Vehicle to Vehicle (V2V) Communication for Sending Safety Messages." 3rd International Conference on Artificial Intelligence for Internet of Things (AIIoT 2024). IEEE, (2024).(India).

- **Dhinesh Kumar R**, Rammohan A. "A Conceptual UAV based Resource Allocation Framework for Next-Generation Heterogeneous V2V Communication Architecture." The 14th International Conference on Computing, Communication and Networking Technologies (ICCCNT), IIT Delhi. IEEE, (2023). (India).

- **Dhinesh Kumar R**, Suresh Chavhan and Joel J.P.C. Rodrigues. "Integration of 5G Standalone and Non-Standalone Network Architectures for V2X Networks." 7th International Conference on Smart and Sustainable Technologies (SpliTech). IEEE, (2022). (Europe).

- **Dhinesh Kumar R**, Suresh Chavhan, Deepak Gupta, Ashish Khanna and Joel J.P.C. Rodrigues. "An intelligent self-learning drone assistance approach towards V2V communication in smart city." Proceedings of the 4th ACM MobiCom Workshop on Drone-Assisted Wireless Communications for 5G and Beyond. ACM, (2021). (United States).

Journals

- Subhranil Das, Rashmi Kumari, Raghwendra Kishore Singh, **Dhinesh Kumar R**, Gauri Shanker Gupta "Optimizing Bearing Health Measurement: A Statistical Feature Extraction Perspective." Engineering in AI Applications. (2025). Impact Factor: 7.5 (In Review).

- **Dhinesh Kumar R**, Rammohan A. "Edge-Driven Resource Allocation in Vehicular Networks: A Joint Framework of Multi-Agent Reinforcement Learning and Demand-Supply Predictive Modeling." Results in Engineering. (2025). Impact Factor: 6.5 (Minor Revision).

- **Dhinesh Kumar R**, Rammohan A. "Optimizing UAV Deployment for Maximizing Coverage and Data Rate Efficiency using Multi-Agent Deep Deterministic Policy Gradient and Bayesian Optimization" Physical Communications (2025). Impact Factor: 2.0.

- Aditya Raj Singh Chauhan, Antriksh Gupta, **Dhinesh Kumar R**, Ashhar Husain, Amit Agarwal. "Traffic Signal Control: An Application of Max Pressure to Heterogenous Traffic Conditions." Transport Planning and Technology (2024) Impact Factor: 1.6 (In Review).

- **Dhinesh Kumar R**, Rammohan A. "Revolutionizing Intelligent Transportation Systems with Cellular Vehicle-to-Everything (C-V2X) Technology: Current Trends, Use Cases, Emerging Technologies, Standardization Bodies, Industry Analytics and Future Directions." Vehicular Communications, 43, 100638. (2023). Impact Factor: 5.8

- **Dhinesh Kumar R**, Suresh Chavhan. "Shift to 6G: Exploration on trends, vision, requirements, technologies, research, and standardization efforts". Sustainable Energy Technologies and Assessments, 54, 102666. (2022). Impact Factor: 8

- **Dhinesh Kumar R**. "5G Technology: A Key Evolution for IOT." International Journal of Communication and Networking System, Volume: 08, Issue: 01, Pages 32-42, ISSN: 2278-2427 (2019).

- Ravi K, Ponmanaselvan, **Dhinesh Kumar R**. "Fermat and his contributions to Mathematics."Bulletin of the Marathwada Mathematical Society Vol. 16, No. 2, Pages 22-29 (2015).

- Jamuna, Ravi K, **Dhinesh Kumar R**. "Functional Equations in Wireless Sensor Networks."Bulletin of the Marathwada Mathematical Society Vol. 14, No. 2, Pages 86-93 (2013).

Featured In

- Showcased our cutting-edge prototype, 'AdaptiSync: AI-based Real-Time ATCS using Edge and Cloud Computing,' at the **prestigious R&D Innovation Fair, IInvenTiv, hosted by IIT Hyderabad**. Our prototype was selected as one of the most significant products under the 'Smart India Mission,' among a total of 117 other remarkable products. We had the privilege of showcasing our product to the **Honorable Union Education Minister, Dharmendra Pradhan, Government of India**. (Jan 19 & 20, 2024).

- Delivered a technical session on "Edge enabled QoS improvement for Vehicle to Vehicle (V2V) Communication and showcased the 4G/5G performance analysis for V2V communication" to **Volvo R&D Groups, Bangalore, India** led by **Mr. Vyakarna Manjunath - Group Truck Technology (GTT) & team** on (22nd June 2023).

Research Proposals/Grants

- AI driven Decision Support System (DSS) for Urban Heat Island (UHI) mitigation bridging adaption gap through Geospatial Analysis and IoT integration - **Position: Co-principal Investigator** Status: Under Review - 2024 .

- Next Gen Vehicle Connect (NGVC) – A Revolutionary B5G/6G Testbed for Context Aware V2X Communications using Edge AI for safety applications in rural and metropolitan regions. - **Position: Principal Investigator** Status: Under Consideration - 2025 .

Journal Technical Reviewer

- Technical Reviewer in IEEE Transaction on Fuzzy Systems (Impact Factor: 11.9).
- Technical Reviewer in Alexandria Engineering Journal (Impact Factor: 6.8).
- Technical Reviewer in Peer J – Computer Science Journal (Impact Factor: 3.061).
- Technical Reviewer in Science China Information Sciences – Telecom/Engineering (Impact Factor: 8.8).
- Technical Reviewer in Archives of Current Research International (Impact Factor: 2.0).

Guest Lectures - Technology

- Delivered the virtual presentation on "Measuring the Resource Requirement of 5G Architecture" to the **US and Asian clients during the virtual technical sessions organized by Mirabilis Design Inc**. (2020).

- Delivered the virtual presentation on "5G Applications and Challenges" to the **Department of Electronics and Communications Engineering, R.M.D. Engineering College**, India. (2020).

- Delivered the virtual presentation on "Technical Overview of 5G Technology" during the **International Faculty Development Program organized by NGM College**, India. (2020).

- Delivered the virtual presentation on "5G - A Key Evolution for IOT" during the **International Conference on Computing Paradigms organized by Don Bosco College**, India. (2019).

- Delivered the talk on "AI Techniques to solve Telecom Issues" during the **Industry Project Meet organized by Defense Science and Technology Laboratory (DSTL)**, UK (2018).

Management Oriented Skills

- Organized and managed knowledge transfer sessions in software coding, facilitating skill development and cross-functional understanding among team members.
- Demonstrated strong leadership and organizational skills by making the right decisions by utilizing analytical-oriented skills, managing resources/funding effectively, and ensuring seamless knowledge dissemination by identifying knowledge gaps and implementing targeted growth initiatives to address them.
- Involved in writing various research and prototype proposals by liaising with academic and industry partners.
- Provided support to the cross-functional team during critical times.
- Supported the growth and development of team members by providing hands-on guidance, mentoring, and coaching in technology and software coding practices.

Honors

- Won **Second Price** in **IDEATHON 2024** conducted by School of Electronincs Engineering at VIT (20-21 June 2024).
- Obtained the prestigious **"Raman Research Award & Dr. APJ Abdul Kalam Research Award"** for the research publications.
- Obtained the prestigious academic grant called **"Great Britain Scholarship"** for the year 2017.

Psychometric Profiling

- Obtained **"Elite Category"** on the course **"Evolution of Air Interface towards 5G"** from NPTEL (Online Certification).
- Completed the certification course on **"Quality Management Systems"** - (ISO 9001:2015) from CQI/IRCA.
- Successfully obtained the completed certificate from the **International English Language Testing System (IELTS)**.

References

- Dr. Rammohan A, Senior Assistant Professor, VIT Vellore.
- Dr. Yi Ma, Chair Professor of Cognitive Communications, University of Surrey UK.
- Dr. Amit Agarwal, Assistant Professor IIT Roorkee.
- Dr. Suresh Chavhan, Assistant Professor, IIIT Raichur.
- Dr. Vinay Chamola, Senior Assistant Professor, BITS Pilani.