DR. NEERAJ KUMAR SINGH

Senior Technical Lead (Certified Project Manager), HCL Tech

Experienced educator, researcher, and industry practitioner with a strong record of **academic teaching, impactful research, and real-world professional exposure**. Aspiring to contribute as **Associate Professor or Dean (R&D)** by leading multidisciplinary research initiatives, securing grants, promoting innovation, and enhancing institutional research productivity, quality assurance, and global visibility.

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Google Scholar: https://scholar.google.co.in/citations?user=19Uk420AAAAJ&hl=en

CORE COMPETENCIES

New Course Content Creation
Project Management
Certified Project Manager
NAAC
NBA
Model Based Development
Battery Management Systems
Six Sigma
EV Powertrain
EV Chargers
Project Execution & Monitoring
Risk Management
Budgeting & Estimation
Delivery Managements
Hardware-in-loop
HIL
Agile Methodologies
Client & Vendor Management
SME
Mentoring & Training

IT SKILLS

- **Software Tools:** MATLAB, SIMULINK, STATEFLOW, OrCAD, Windchill, TPT, Cadence, CAN, CANoe, CANanalyzer Targetlink/dSPACE, Scalexio, Embedded Coder, BMS, Knowledge of AUTOSAR & ISO 26262, PowerBI
- GIT (Version Control), JIRA

CERTIFICATIONS

- Certified Lean Six Sigma Black Belt, HIL Specialist (Typhoon), MATLAB, BMS, SCRUM, GITHUB

SOFT SKILLS

PROFILE SUMMARY

- Extensive professional background integrating **teaching, academic research, and industry experience** to bridge theory with practical application.
- Publishing **30+ research papers in reputed international journals and conferences** with **700+ citations** and contributions to **high-impact-factor publications**.
- Proven expertise in **curriculum development, outcome-based education (OBE), and innovative pedagogy** in higher education.
- Strong track record of **quality research publications, funded projects, patents, and conference contributions** in reputed national and international forums.
- Significant experience in **leading multidisciplinary research programs and institutional R&D initiatives** that enhance innovation and knowledge creation.
- Demonstrated involvement in **NAAC and NBA accreditation processes**, including documentation, compliance, quality assurance, and continuous improvement strategies.
- Skilled in **research grant acquisition, project management, and fostering a sustainable research and innovation ecosystem** within the institution.
- Active promoter of **industry–academia collaboration, consultancy, internships, and technology transfer** aligned with emerging industry needs.
- Experienced in **mentoring students, supervising postgraduate/doctoral research, and supporting faculty research development**.
- Strong capability in **academic administration, strategic planning, and improving institutional rankings, research output, and quality benchmarks**.
- Committed to **ethical research practices, academic leadership, and excellence in teaching–learning, accreditation, and R&D governance**.
- **Rich experience in analysis of financial data** as it pertains to each project in their control, including the proper distribution and allocation of resources, the implementation of budgets and the quantification of monetary risk and impact.
- **Implementing established policies, system monitors and controls** to ensure the successful management and reporting of all corporate initiatives in program.

AWARDS

- **Award: 1st Reviewer Award** from L&T Technology Services, India
- **IEEE-Thailand Section Student Travel Grant Award** for GTD Asia 2019
- **IEEE- Malaysia Robotics Student Travel Grant Award for** ScorEED 2019
- **IEEE-Indonesia Amikom University Student Travel Grant Award** for ICOIACT 2019

WORK EXPERIENCE

HCL Tech (Automotive & Electromobility) | Bangalore | Senior Technical Lead | Sep'23-Present

NeST Digital (Automotive & Electromobility) | Kochi, India | Senior Software Engineer | Dec'22- Sep'23

L&T Technology Services (MBD: Automotive & Electromobility & Power) | Mysore, India | Engineer (R&D) | Dec'21-Dec'22

Research Lab: S.V National Institute of Technology | Surat, India | Research Scholar (Model Based Design: Control Algorithm, Power) | Jul'18-Nov'21

P.E.S. College of Engineering| India | Assistant Professor | Jan'17-Jun'18

Wind World India Ltd. | India | Graduate Engineer Training | Oct'12-Dec'13

Key Result Areas across the career:

- Delivering excellence in **teaching, academic research, and industry engagement**, effectively integrating theoretical knowledge with real-world applications.
- Designing and implementing **outcome-based curriculum, innovative pedagogy, and learner-centric teaching methodologies** aligned with higher-education standards.
- Leading and strengthening **institutional research and development (R&D) initiatives**, multidisciplinary research programs, and innovation-driven academic culture.
- Demonstrating strong involvement in **NAAC and NBA accreditation processes**, including documentation, compliance, quality benchmarks, and continuous improvement frameworks.
- Securing and managing **research grants, funded projects, consultancy assignments, and technology-driven innovation initiatives**.
- Building robust **industry–academia partnerships**, enabling internships, collaborative research, and practical exposure aligned with market needs.
- Mentoring **undergraduate, postgraduate, and doctoral students**, and guiding faculty toward enhanced **research productivity and academic excellence**.
- Conducting **training programs for GETs and freshers** aligned with **client expectations, industry standards, and evolving market requirements**.
- Contributing to **academic leadership, strategic planning, institutional ranking improvement, and ethical research governance** in higher education.

EDUCATION

- **Doctor of Philosophy (Electrical Engineering)** | Sardar Vallabhbhai Patel National Institute of Technology| Surat, GJ, India| 2018-2021
- **Master of Engineering (Electrical Power Systems)** | Government College of Engineering | Aurangabad, MH, India | 2014-2016
- **Bachelor of Technology (Electrical Engineering)** | B. B. D. National Institute of Technology and Management | Lucknow, UP, India | 2008-2012

PERSONAL DETAILS

Date of Birth: 02nd November 1990
Languages: English and Swedish (Beginner)
Address: Bangalore

Please refer to annexure for project details:

ANNEXURE

PROJECTS

Meta AI

Software Tools Used:

Role:

- NPI Devices Management: Successfully led the New Product Introduction (NPI) process for AR/VR hardware and devices, ensuring seamless transition from design to production. Oversaw prototype validation, compliance testing, and coordinated cross-functional teams for on-time delivery.
- AR/VR Testing & Quality Assurance: Directed end-to-end Augmented Reality (AR) and Virtual Reality (VR) testing cycles, including functionality, usability, and performance validation. Established test protocols, identified defects early, and collaborated with QA engineers and developers to ensure product reliability and immersive user experience.
- Project Management: Applied Agile and Waterfall methodologies to plan, execute, and monitor multiple projects simultaneously. Defined project scope, created roadmaps, and ensured delivery within scope, schedule, and budget. Maintained risk registers and implemented mitigation strategies to minimize delays.
- Client Management: Acted as the primary liaison for clients across AR/VR product development and deployment projects. Captured requirements, facilitated regular review meetings, presented project progress, and managed expectations to achieve 95%+ client satisfaction scores.
- Cost & Budget Management: Prepared and monitored project budgets, optimized resource allocation, and achieved an average 15% cost reduction without compromising quality. Negotiated with vendors and partners to streamline expenses.
- Cross-Functional Collaboration: Coordinated with R&D, design, testing, and supply chain teams to accelerate product launches and enhance operational efficiency. Provided clear reporting to senior leadership and ensured alignment with business goals.

Volvo GTT (Power Management for Commercial Vehicles)

Software Tools Used: MATLAB (2019b), TPT, SIMULINK, STATEFLOW, MIL, HIL, Control Algorithm, BMS, Battery

Role:

- Orchestrated creation & refinement of power management system architecture (BMS) and algorithms through the Model-Based Design (MBD) process.
- Engaged with multidisciplinary teams to seamlessly integrate the power management system into existing vehicle frameworks.
- Executed MIL/SIL/HIL testing in alignment with specified requirements.
- Partnered with the quality assurance team to guarantee compliance with standards and requirements.
- Crafted and upheld comprehensive documentation.

In-House Project Leadership:

Role:

- Championed and directed in-house projects centered around automotive architecture, employing advanced Model-Based Design methodologies.
- Guided cross-functional teams through all phases of project development, from initiation and planning to execution and successful delivery, ensuring compliance with schedules and quality benchmarks.
- Leveraged tools such as MATLAB and other software to devise sophisticated control systems, optimizing the efficiency and performance of automotive components.
- Exhibited a results-driven mindset by achieving project objectives and providing high-caliber solutions within established parameters.

Training and Mentorship:

Role:

- Facilitated the transfer of expertise and skills to entry-level professionals and recent graduates within the automotive sector.
- Delivered extensive training sessions on Model-Based Design, offering practical experience and cultivating a culture of ongoing development within the team.

Project Management Excellence:

- Applied strategic project management techniques to guarantee flawless task execution, efficient resource utilization, and successful project outcomes.
- Showcased adeptness in risk management and stakeholder communication, leading to streamlined project processes.

EV Charger (50kW) and On-Board Chargers for Automotive (Client: Nissan)

Role:

- Executed a thorough investigation, architectural design, and feasibility assessment of the EV Charger (50kW) and On-Board Chargers, ensuring alignment with client specifications and industry benchmarks.
- Utilized Model-Based Design methodologies, incorporating tools such as MATLAB, TPT, SIMULINK, STATEFLOW, MIL (Model-in-Loop), and SIL (Software-in-Loop) for advanced system modeling.
- Directed the modeling phase, developing complex simulations to guarantee precision and effectiveness in subsequent development stages.
- Demonstrated expertise in E-mobility powertrain and control algorithms.
- Played a crucial role in the testing, Verification, and Validation (V&V) processes, certifying the functionality and performance of the developed software in accordance with project requirements.

- Coordinated with multidisciplinary teams, including hardware engineers and system integrators, to facilitate the seamless integration of software with the EV Charger and On-Board Charger systems.

LRDE Project associated with DRDO

Software Tools Used: MATLAB (2019b), TPT, SIMULINK, STATEFLOW, Scalexio, MIL, HIL, ASPICE, dSpace
Software Language: Embedded C
Role:

- Performed a detailed investigation & feasibility evaluation for the LRDE project in collaboration with DRDO, ensuring alignment with project goals and client expectations.
- Applied Model-Based Design techniques using MATLAB, SIMULINK, STATEFLOW, MIL (Model-in-Loop), and SIL (Software-in-Loop) for system modeling, establishing a robust foundation for future development phases.
- Employed Embedded C for software development, contributing to the creation of software modules that adhere to stringent project standards.
- Conducted hardware testing to verify the integration of software with embedded systems, ensuring smooth functionality in practical applications.
- Engaged with interdisciplinary teams to resolve project challenges, fostering effective communication among software engineers, hardware engineers, and project managers.

Feasibility Studies and Model-Based Design of Totem Pole PFC (Client: EATON)

Role:

- Executed detailed operational and feasibility analyses for the Totem Pole PFC design provided by EATON, ensuring congruence with project goals.
- Directed a team of 8 Associate and Junior engineers in conducting comprehensive evaluations, establishing the foundation for successful model-based design.
- Applied Model-Based Design methodologies, employing MATLAB SIMULINK for the sophisticated modeling of the Totem Pole PFC system.
- Administered thorough testing of the system, assessing various parameters to affirm the performance of the architectural design.
- Formulated & deployed control algorithms for the Totem Pole PFC model, ensuring peak performance and operational efficiency.

Model-Based Design for Heating Ventilation Air Conditioning (Client: Carrier)

Role:

- Executed operational and feasibility assessments for the HVAC system, enhancing energy efficiency for Carrier.
- Directed a team of 5 Associate and Junior engineers in evaluating system requirements and design factors.
- Implemented Model-Based Design techniques utilizing MATLAB SIMULINK/STATEFLOW and M Script for the modeling and refinement of the HVAC system.
- Conducted extensive performance validation testing under varying conditions.
- Contributed to the optimization of the HVAC system for energy efficiency, aligning with industry standards and client requirements.

Industrial DC Battery Charger (ABB - Automotive & Electromobility Unit)

Role:

- Performed operational studies and established functional requirements for the Industrial DC Battery Charger in collaboration with ABB's EV Unit.
- Led a team of 2 Engineers in detailing project specifications.
- Applied Model-Based Design principles for the development of the DC battery charger using MATLAB SIMULINK.
- Utilized Windchill for managing the Bill of Materials (BOM) and related documentation.
- Supervised the ongoing project, ensuring compliance with operational requirements and functional specifications.

Design and Development of Electric Vehicle Chargers (ABB - EV Unit)

Software Tools Used: MATLAB (2019b), TPT, SIMULINK, Scalexio, OrCAD, Cadence, PTC Windchill
Role:

- Conducted operational and rapid charging assessments for the development of Electric Vehicle Chargers ranging from 60 kW to 600 kW.
- Independently initiated the project, leading a team of 4 to address client requirements.
- Independently executed the feasibility study, enabling a prompt project commencement.
- Established and guided a team of 4, ensuring alignment with client specifications through the project's waterfall model.
- Managed the complete product development lifecycle for Electric Vehicle Chargers, overseeing operational studies and rapid charging considerations.

Designing and Development of Model-Based Design for Smart Grid Security in Cyber-Physical Systems using MATLAB (2019b) Software

Software Tools Used: MATLAB (2019b/2018a), TPT, SIMULINK, PSS, ETAP, dSpace, HIL

Project

Software Tools Used: MATLAB (2019b), MATLAB (2016a)

Executing High Voltage Grid Integration of Wind Turbine at Bhakarani Wind Farm | Jaisalmer, Rajasthan | Oct'12-Dec'13

RESEARCH

Major Research Publications:

- Future of Electric Mobility on Cyber-Physical Systems (CPS) | by Dr. Neeraj Kumar Singh, NeST Digital (Automotive) | Medium
- Will my EV secure a high rating of safety in Cyber-Physical Systems (CPS) by adopting machine learning? | by Dr. Neeraj Kumar Singh, NeST Digital (Automotive) | Medium
- Bhukya, Jawaharlal, Neeraj kumar Singh, and Vasundhara Mahajan. "Impact of aggregated model-based optimization for wind farm and electric vehicle on power system stability." Computers and Electrical Engineering 105 (2023): 108480. https://www.sciencedirect.com/science/article/abs/pii/S0045790622006954
- Singh, Neeraj Kumar, Mahshooq Abdul Majeed, and Vasundhara Mahajan. "Statistical machine learning defensive mechanism against cyber intrusion in smart grid cyber-physical network." Computers & Security 123 (2022): 102941. https://www.sciencedirect.com/science/article/abs/pii/S0167404822003339
- Singh, Neeraj Kumar, and Vasundhara Mahajan. "End-user privacy protection scheme from cyber intrusion in smart grid advanced metering infrastructure." International Journal of Critical Infrastructure Protection 34 (2021): 100410. https://www.sciencedirect.com/science/article/abs/pii/S1874548221000020
- Singh, Neeraj Kumar, Mahshooq Abdul Majeed, and Vasundhara Mahajan. "Forecasting Intrusion in Critical Power Systems Infrastructure Using Advanced Autoregressive Moving Average (AARMA) Based Intrusion Detection for Efficacious Alert System." Scientia Iranica (2023). https://scientiairanica.sharif.edu/article_23080.html
- For more publication details please visit:
- https://scholar.google.co.in/citations?hl=en&user=19Uk420AAAAJ&view_op=list_works