Phani Raja Bharath Balijepalli, PMP®

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Professional Summary

Engineering professional with an M.S. in Modeling & Simulation and 9+ years of experience spanning project management, manufacturing, and quality systems across the aerospace, renewable energy, telecommunications, and oil & gas sectors. PMP-certified, with a strong track record of cross-functional technical coordination bridging physical asset monitoring and data-driven analytics. Combines hands-on engineering knowledge with technical capabilities in simulation modeling, machine learning, and IoT system integration. Expertise includes end-to-end product development from design through deployment, heavy-fabrication quality assurance (API Q1, MIL-STD, ISO 9001), and welding and NDT qualification.

Work Experience

Graduate Teaching Assistant, University of Central Florida   Aug–Dec 2025
Orlando, United States

- Supported instruction for the *Perspectives in Modeling and Simulation* course by leading and supporting lab demonstrations in Discrete Event, Continuous, and Agent-Based Simulation, and providing troubleshooting and scaffolding support for student simulation models.
- Managed Canvas LMS content delivery and grading for 29 students across multiple simulation paradigms.
- Designed project management template adopted by 100% of students for capstone simulation projects.

Manager, HCL Technologies   Jan–Jul 2024
Bengaluru, India

- Led cross-functional analytics and resource teams supporting U.S. telecom operations during a major transition.
- Managed transition training for 28 resources during a large-scale operational handover, achieving a 100% certification pass rate and supporting stable post-handover operations with zero service disruption.
- Implemented KPI-driven reporting and deployment frameworks to streamline operational reviews.

Project Manager, StartupCrafters   Sep 2022–Jan 2024
Hyderabad, India

- Led cross-functional coordination across mechanical, embedded, and software teams to develop an IoT medical device MVP.
- Resolved React–BLE integration challenges through technical alignment between application and embedded teams.
- Delivered a working MVP demonstration unit to U.S. stakeholders, supporting technical validation.

Senior Engineer - QA/QC, ICOMM Tele Limited   Dec 2019–Sep 2022
Hyderabad, India

- Led quality assurance for MIL grade EMI/EMC enclosures and Oil & Gas Category B/C manufacturing in compliance with API Q1 requirements.
- Managed product qualification activities, including coordination of environmental, EMI/EMC, and shielding effectiveness testing (MIL-STD-801F, MIL-STD-461, IEEE 299), along with dimensional inspection, material qualification, and QA documentation (QAP, QTP, ATP).
- Oversaw welder qualification to ASME Section IX and AWS D1.2 standards and coordinated NDT Level II inspections (VT, PT, UT, RT, MT), achieving zero non-conformances across third-party and customer audits.

Quality Associate, Mytrah Energy India Pvt. Limited   Jun 2016–Dec 2018
Hyderabad, India

- Executed Advanced Product Quality Planning (APQP) for 300 MW solar tracker structures, performing inspection of 200+ tonnes of structural steel and ancillary equipment.
- Implemented inspection protocols and supplier quality controls, reducing vendor defect rates and improving throughput by approximately 20%.

Project Associate, KV Solar Energy   Apr 2015–May 2016
Hyderabad, India

- Performed feasibility studies and technical design for solar energy projects using AutoCAD and SolidWorks for system layouts and structural components.
- Conducted site assessments and prepared engineering documentation supporting project proposals and client presentations.

Graduate Apprentice, ISRO – Satish Dhawan Space Centre Mar 2014–Mar 2015
Sriharikota, India

- Designed molds and fixtures for composite propellant casting operations ensuring dimensional accuracy and process repeatability.
- Supported solid rocket motor handling operations including EOT crane operations, platform folding mechanisms, and tilting procedures.

Research Projects

Climate-Aware Modeling for Energy-Efficient Data Center Workload Routing *Primary Author*

Live application: `shorturl.at/qOoQb`   Git Repository: `shorturl.at/RI1hj`

- Proposed a novel climate-aware, simulation-based framework integrating real-time weather data to support AI workload routing decisions across geographically distributed data centers.
- Developed physics-informed ML models (MLR, Bayesian-optimized ANN; $R^2 \approx 0.99$) for energy and thermal response estimation and evaluated routing policies using Monte Carlo simulation under stochastic weather and demand.
- Demonstrated reduced peak localized thermal accumulation with minimal impact on overall energy efficiency; manuscript under review at *ANNSIM 2026*.

Traffic and Weather-Driven Hybrid Digital Twin for Bridge Monitoring *Primary Author*

Git Repository: `shorturl.at/XBmCx`

- Developed a sensor-light hybrid digital twin combining traffic cameras, weather APIs, and LWR-based traffic flow simulation for bridge condition monitoring.
- Integrated YOLOv8 vehicle detection with fatigue accumulation and reliability proxies using Random Forest–based estimation and Monte Carlo simulation.
- Generated probabilistic risk indicators for maintenance screening and inspection prioritization; manuscript under review at *IABMAS 2026*.

Bayesian Zero-Inflated Negative Binomial Spatio-Temporal Modeling and Geosimulation for NYC Taxi Demand *Co-Author*

- Contributed to a Bayesian ZINB spatio-temporal model with NNGP structure for scalable urban demand inference.
- Supported Pólya–Gamma data augmentation, SVD-based Gibbs sampling, and geosimulation for counterfactual scenario analysis.
- Manuscript under review at *ACM Transactions on Spatial Algorithms and Systems*.

Education

Master's, Modeling and Simulation, University of Central Florida Dec 2025
CGPA: 4.0 Orlando, Florida
Bachelor's, Mechanical Engineering (WES Verified), JNTU May 2013
CGPA: 3.4 Hyderabad, India

Software & Skills

Simulation & Modeling: AnyLogic, FlexSim, @Risk
Programming Languages: Python
Quality & Standards: MIL-STD-801F, MIL-STD-461, IEEE 299, ISO 9001:2015, ASME Section IX, AWS D1.2
Design & CAD: AutoCAD, SolidWorks
Project Management: MS Project

Certifications

- Project Management Professional (PMP) – PMI
- ASNT NDT Level II Certifications: Visual Testing (VT), Penetrant Testing (PT), Ultrasonic Testing (UT), Radiographic Testing (RT), Magnetic Particle Testing (MT)
- ISO 9001:2015 Lead Auditor
- Digital Technologies and the Future of Manufacturing – University of Michigan
- Lean Six Sigma Green Belt