Dr. Rajeev Kumar Gupta

Assistant Professor | Mechanical Engineering | Dayananda Sagar University, Bengaluru

AI/ML • Deep Learning • NVIDIA DLI • Tribology • Additive & Smart Manufacturing

AI

DLI | NVIDIA

CORE EXPERTISE

- Artificial Intelligence & Machine Learning for engineering applications
- Deep learning and computer vision for materials, wear and surface analysis
- Tribology of polymer–metal and biomedical implant systems
- Surface texture, roughness, wear-debris morphology and mechanism analysis
- Additive manufacturing, smart manufacturing and data-driven engineering
- Python / MATLAB, CAE, statistical analysis and predictive modelling

PROFESSIONAL DEVELOPMENT

NPTEL Online Certification / AICTE FDP — Artificial Intelligence and Machine Learning in Materials Engineering (12 weeks, Jul–Oct 2025).

FDP — Human-Centered AI in Higher Education: Leveraging Large Language Models for Innovation, Teaching Excellence & Industry Alignment (8–13 Jun 2026).

RESEARCH KEYWORDS

AI-enabled tribology • deep learning • computer vision • wear prediction • surface texture • HDPE/UHMWPE • SS316L • additive manufacturing • digital twins • predictive maintenance

PROFESSIONAL PROFILE

Dr. Rajeev Kumar Gupta is an Assistant Professor in Mechanical Engineering at Dayananda Sagar University, Bengaluru, with a Ph.D. in Mechanical Engineering from the Indian Institute of Science (IISc), Bengaluru. His work integrates tribology, surface engineering and advanced manufacturing with artificial intelligence, machine learning and data-driven modelling. His research particularly addresses friction, wear, surface-texture effects and wear-debris behaviour in polymer–metal systems relevant to biomedical joint implants and other engineering applications.

AI, DEEP LEARNING & NVIDIA DLI FOCUS

- Developing AI/ML-based predictive models to relate surface topography, friction, wear and debris morphology, with emphasis on interpretable engineering correlations and mechanism-informed learning.
- Extending deep-learning and computer-vision methods to SEM/microscopy images for automated wear-feature detection, debris classification, surface-defect recognition and quantitative morphology analysis.
- Building capability around NVIDIA Deep Learning Institute (DLI) and GPU-accelerated AI workflows as a professional-development focus, including accelerated model training, computer vision and scientific/engineering computing.
- Exploring AI-assisted inverse design of surface textures, digital twins, predictive maintenance and intelligent optimization for additive and smart manufacturing systems.

RESEARCH & PUBLICATION INTEGRATION

His recent research portfolio includes machine-learning-enabled studies in tribology and engineering materials, including analysis of surface-texture orientation effects on HDPE wear-debris morphology and tribological performance, as well as ML-supported studies of composite materials and wear behaviour. Ongoing work aims to combine experimental data, surface metrology, microscopy and AI/ML to develop robust predictive and decision-support tools for engineering design.

TEACHING & ACADEMIC INNOVATION

In teaching, he integrates AI-assisted learning, engineering computation, CAD/CAE, Python/MATLAB, data visualization and research-oriented problem solving. His academic interests include developing AI-enabled modules for machine design, materials engineering, tribology, additive manufacturing and smart manufacturing, while promoting responsible and human-centered use of generative AI in higher education.

Current goal: bridge experimental mechanical engineering with AI, deep learning and GPU-accelerated computing to create intelligent, predictive and industry-relevant solutions.