

Artificial Intelligence Engineering

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Asma Bano*

Mittal School of Business, Lovely Professional University, Punjab, India

***Corresponding Author:** Asma Bano, Mittal School of Business, Lovely Professional University, Punjab, India.

AI engineering is important globally. AI enhances design, testing, and optimization processes, leading to faster and more efficient engineering solutions. Generative design helps engineers create optimal structures, reducing material waste and improving performance. AI-powered predictive maintenance minimizes equipment failures, decreasing accidents and costly downtimes and upkeep expenses, utilized in sectors such as manufacturing, automotive, and aerospace. AI helps to ensure public safety by monitoring the structural integrity of buildings, bridges, and transit systems. The development of stronger, lighter, and more sustainable materials is made possible by AI's acceleration of material discovery. AI-powered simulations advance biomedical, automotive, and aeronautical research, resulting in innovations across a range of industries. AI lowers carbon footprints by optimizing energy use in smart cities and enterprises. Natural disasters like floods and wildfires can be predicted and lessened with the aid of AI-driven climate models. AI improves environmental conservation efforts by assisting with recycling and garbage management. Automation and robotics powered by AI speed up production, cut down on human error, and save money. AI improves quality control in sectors like electronics and automobile manufacturing by recognizing images and providing real-time monitoring. AI improves healthcare globally by helping with medication development, prosthesis design, and personalized medicine. Early disease diagnosis is made possible by AI-powered diagnostic tools, which improves treatment results. AI lessens traffic and accidents by facilitating the development of autonomous vehicles and improving traffic management. Smart grids driven by AI improve the distribution of electricity and guarantee a steady supply of power in both urban and rural locations. AI-driven technologies optimize current engineering roles while generating new sectors and employment possibilities. AI helps startups and entrepreneurship by offering cutting-edge resources for company optimization and product development. AI analyzes vast volumes of data to assist engineers in making defensible choices instantly. AI-driven modeling and simulations enhance engineering solutions by cutting down on trial-and-error procedures. AI speeds up global problem-solving by facilitating cross-border research and development. Global issues including infrastructure development, disaster response, and climate change are addressed in part by AI-powered engineering solutions.

By improving design, analysis, automation, and optimization in a variety of domains, Artificial Intelligence is revolutionizing engineering. AI algorithms optimize for weight, strength, and cost while producing a variety of design options based on input limitations. CAD stands for computer-aided design. Improvements: AI helps with automated drafting, error detection, and predictive modeling. Digital twins and simulation: AI-driven digital twins imitate real-world systems for testing, moni-

toring, and optimization in real time. AI reduces maintenance costs and downtime by analyzing machine sensor data to anticipate failures before they occur and utilized in sectors such as manufacturing, automotive, and aerospace. Self-governing systems, including self-driving AI is used by autonomous systems, including drones and self-driving automobiles, to navigate and make decisions. In order to identify stress, weariness, or possible problems, artificial intelligence analyzes data from sensors installed in buildings, bridges, and other infrastructure. AI predicts chemical compositions and physical behaviors, which speeds up the process of finding novel materials with required features. AI optimizes energy use in industrial processes, buildings, and grids. AI is used by smart grids for anticipatory demand management, load balancing, and the integration of renewable energy sources. AI-powered project management solutions increase safety, optimize resource allocation, and forecast risks, automated quality control that uses picture recognition to find flaws on building sites. AI improves automotive and aircraft fuel economy, material choices, and aerodynamics. AI is used in the development of autonomous vehicles for perception, planning, and control. AI supports drug discovery, prosthetics design, and medical imaging. Wearable technology powered by AI tracks health indicators and forecasts illnesses. AI models enhance waste management effectiveness, forecast climatic trends, and optimize water treatment procedures. AI in engineering is revolutionizing industries and has a profound impact on the world.

AI in engineering is changing technology, sustainability, and human well-being in addition to streamlining current procedures. Smarter, safer, and more effective solutions that benefit society as a whole are ensured by its incorporation into a variety of industries.