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Editorial Note

Viewing AI Studies from an IJTech Perspective

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Over the past decade, artificial intelligence (AI), machine learning, and neural-network-based methods have moved from the margins of engineering research into the mainstream. This trajectory is clearly visible in the publication statistics of International Journal of Technology (IJTech). Using our internal data from 2016–2025, this editorial note reflects on the rise of AI-themed submissions and publications in IJTech and discusses how their citation performance compares, in broad terms, with the journal's generic themes.

Our dataset identifies articles whose title, abstract, or keywords explicitly include "artificial intelligence," "machine learning," "neural network," or closely related terms. From 2016 to 2025, IJTech published 90 such AI-themed papers, which together received 712 citations—an average of 7.9 citations per article over the period. This already indicates that AI-related work is not only numerous but also visible within our citation landscape.

When we look at the share of AI papers in the journal's overall output, the growth is striking. Between 2017 and 2025, IJTech published 1,254 papers across all themes. In the same years, 86 of these were AI-themed, meaning that roughly 7% of all IJTech publications since 2017 explicitly use AI, machine learning, or neural-network approaches. In the early years, AI was truly a niche: in 2017–2019, AI contributions accounted for only around 2–3% of all published papers per year. By 2022, this share had increased to about 8.5%, and in 2023 AI papers represented more than 13% of that year's output. In 2024, they remained at about 10% of all publications.

The data for 2025 are particularly notable, although they must be interpreted cautiously because the year is still incomplete. In the current snapshot, only 26 papers are recorded as published, and 20 of these are AI-themed. In other words, nearly 77% of the 2025 publications so far fall into the AI/machine learning/neural-network category. Even allowing for additional non-AI papers that will be added as the year closes, it is clear that AI has become one of the dominant themes in our recent issues.

Citation patterns within this AI subset also tell an important story. Early AI papers, published when the topic was still emerging in our community, attracted relatively high citation densities: in 2016–2019 the average ranged from about 7 to 18 citations per article, and in 2020 it peaked at more than 28 citations per article. These papers often introduced AI tools into areas where they were still novel—such as predictive maintenance, process optimization, energy systems, and transport modeling—so each contribution had strong visibility. As AI became more common and the number of AI-themed papers increased, the average citations per AI article began to moderate: around 8 citations per paper in 2021, 9 in 2022, 6 in 2023, and lower values so far for 2024–2025 (partly because these papers are still very recent and have not had

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time to accumulate citations). Even so, across the decade, AI contributions as a group maintain a healthy citation/article ratio that is broadly comparable to, and in several years appears to be above, the typical performance of more generic themes in the journal. For IJTech, these patterns have several implications. First, AI is no longer a special topic but a cross-cutting methodology that now appears in roughly one out of every ten papers we publish, and in some recent issues, a much higher fraction. Second, the most visible AI papers are not those that merely apply fashionable algorithms, but those that combine robust data, careful experimental or numerical design, and genuine technological insight. Finally, as AI becomes mainstream, our editorial emphasis will shift increasingly from "Is this AI?" to "Does this AI-based work advance technology and engineering in a meaningful, rigorous, and responsible way?".

1. This issue

The articles included examine how design approaches, novel material research, advanced manufacturing and industrial systems, and digital intelligence engage with real societal demands. Collectively, they highlight concrete routes through which industrial practice can align with sustainable development and broader societal well-being.

The first study, written by Aritonang et al., 2025, explores the influence of manganese addition on the structure, density, and hardness of Fe–Mn alloys fabricated by mechanical milling and spark plasma sintering. This study examines phase evolution, densification, and microstructural changes. It identifies 10 wt% Mn as an optimal composition, while higher Mn contents increase ductile austenite and slightly reduce hardness (Aritonang et al., 2025).

The second study, written by Konnikov et al., 2025, introduces a functional modelling methodology for distributions of substantive-content message properties in the information background. This study develops a multimodal probabilistic framework that models intensity with a Gamma distribution and frequency. It shows that this integrated intensity–frequency approach can better capture complex thematic interdependencies in large text corpora, political communication, and marketing decision-making (Konnikov et al., 2025).

The third study, written by Bugaeva et al., 2025, evaluates the potential of Russian regions for industrial microgrid deployment using cluster analysis of industrial, energy, innovation, and tariff indicators. This study groups 66 regions into five clusters and identifies those were strong industrial development. It concludes that targeted microgrid implementation in these priority regions can reduce electricity costs and support sustainable power system development (Bugaeva et al., 2025).

The fourth study, written by Husdi et al., presents a sensitivity enhancement approach for fiber Bragg grating (FBG)-based hydrophones using a quarter-wavelength acoustic resonator for underwater sensing. This study also compares photodiode output signals with and without the resonator to evaluate gain. It shows that acoustic resonance around 1–3 kHz can boost hydrophone sensitivity by up to 23 dB (Husdi et al., 2025).

The fifth study, written by Widiatmoko et al., optimizes bubble-type reactor configuration and electrode geometry to enhance electrochemical carbon dioxide reduction to formic acid. This study examines the effects of sparger type, cathode length, and cathode–sparger distance using a Pb–Sn cathode. It shows that smaller carbon dioxide bubbles, shorter cathodes, and closer sparger placement significantly improve current efficiency and formic acid yield (Widiatmoko et al., 2025).

The sixth study, written by Kartohardjono et al., 2025, synthesizes polyvinylidene fluoride (PVDF) ultrafiltration membranes modified with polyethylene glycol (PEG) for batik wastewater treatment. This study prepares flat-sheet membranes via phase inversion and characterizes their morphology, porosity, hydrophilicity, and mechanical strength. It shows that PEG addition increases porosity, hydrophilicity, and water flux but reduces pollutant rejection (Kartohardjono et al., 2025).

The seventh study, written by Roesyadi and Sahroni, 2025, develops an adaptive neuro-fuzzy inference system (ANFIS) model to accurately predict Z-axis values in automated screw

installation. This study trains ANFIS on machine-controlled assembly data and optimizes Gaussian membership functions. It demonstrates that ANFIS achieves very low prediction errors and outperforms conventional models (Roesyadi and Sahroni, 2025).

The eighth study, written by Raharjo and Ikhsan, 2025, introduces a greedy randomized adaptive search procedure with backtracking line search (GRASP–BLS) to minimize emission and fuel costs in generator scheduling. This study blends metaheuristic exploration with gradient-based local refinement. It shows that GRASP–BLS satisfies operational constraints while cutting costs by up to 10% and emissions by up to 22%, supporting low-carbon power system planning.

The ninth study, written by Atlaskina et al., 2025 investigates natural gas sweetening using a hollow-fiber membrane-assisted gas absorption unit with solutions containing the amino-acid-based ionic liquid. This study optimizes absorbent composition and hollow-fiber performance to balance carbon oxide/sulphide removal with hydrocarbon retention. It identifies an effective formulation on enhancing acid-gas uptake while enabling about 99% hydrocarbon recovery in quasi-real gas mixtures (Atlaskina et al., 2025).

The tenth study, written by Kurniawan et al., 2025, investigates photocatalytic NOx reduction to ammonia using zirconium-incorporated graphitic carbon nitride synthesized by pyrolysis. This study characterizes structure, optics, and surface area and evaluates NOx conversion under visible light. It highlights zirconium-incorporated graphitic carbon nitride as a promising photocatalyst for simultaneous pollution control and sustainable ammonia production (Kurniawan et al., 2025).

The eleventh study, written by Harwahyu et al., 2025, presents a resource-efficient deep packet inspection system with a real-time web dashboard for greener and secure ICT infrastructure. This study integrates open-source nDPI, ZeroMQ messaging, and an energy-sensing model to track protocols and device activity. It achieves high throughput and positive user acceptance, providing an extensible platform for green network monitoring (Harwahyu et al., 2025).

The next study, written by Fortunata et al., 2025, examines how size reduction, drying temperature, and drying time influence overripe tempe powder quality. This study uses response surface methodology to model moisture content, flowability, colour, and aroma. It recommends grinding and drying at 80°C for 240 min, achieving ¡4% moisture and shorter processing time than the known method (Fortunata et al., 2025).

The thirteenth study, written by Raed et al., 2025, presents a smart RFID-driven tracking system for dementia patients using machine learning-based indoor localization in smart homes. This study deploys passive RFID tags, multi-antenna readers, and RSSI–phase fingerprinting with neural networks. It reports up to 98% localization accuracy with low-cost, battery-less infrastructure for scalable elderly care (Raed et al., 2025).

The fourteenth study, written by Lazuardy et al., 2025, formulates an electric vehicle (EV) acceptance model for Indonesia based on product quality, consumer characteristics, adoption context, and perception. This study applies a two-stage PLS-SEM approach to survey data from 181 financially capable car owners in major cities. It finds that consumer traits and contextual factors, rather than product quality, predominantly drive EV acceptance (Lazuardy et al., 2025).

The fifteenth study, written by Chernenko and Borodina, 2025, introduces the Multi-Domain Synergistic Resilience Index (MuSyRI), a bounded early-warning index for risks in critical e-government infrastructure. This study fuses operational, financial, regulatory, and cyber sub-indices. It shows that synergy-based alerts detect overlapping medium risks and enable more proactive governance (Chernenko and Borodina, 2025).

The sixteenth study, written by Putri et al., 2025, introduces a novel method of producing activated carbon from tea twigs through carbonization followed by arc plasma-assisted physical activation. This innovative approach significantly reduces activation time while achieving a high carbon adsorption capacity. The study highlights the effects of varying activation temperatures (600°C–800°C) on pore development and surface area suitable for carbob adsorption applications

(Putri et al., 2025).

The seventeenth study, authored by Dewi et al., 2025, presents a long-haul optical fiber system simultaneously carrying 10 Gbps data and Fiber Bragg Grating sensing over 120 km of single-mode fiber. This study integrates three FBG sensors interrogated by a broadband ASE source and evaluates transmission quality under dispersion compensation schemes. It achieves robust performance with clearly distinguishable reflections, supporting integrated communication–sensing infrastructure (Dewi et al., 2025).

The eighteenth study, written by Asa et al., 2025, applies value engineering to optimize basement construction at new tower project in Jakarta. This study uses Pareto analysis, FAST, AHP, and life cycle costing to compare ground anchors, island-type strutting and a steel platform method. It finds the steel platform alternative yields about 26.7% life-cycle cost savings while maintaining constructability and performance (Asa et al., 2025).

The next study, written by Fitriana et al., 2025, applies an integrated quality system combining statistical process control, lean manufacturing, Six Sigma and sustainability awareness within a PDCA framework to a heavy component manufacturer. Using Sustainable Value Stream Mapping, Process Activity Mapping, and CART–Power BI analytics, it lifts sigma from 3.36 to 3.75 (Fitriana et al., 2025).

The twentieth study, written by Harianto et al., 2025, designs a portable vertical biomass pellet burner with a multilayer heat exchanger for green tea drying. This study tests pellet feeding rates and drying airflow to characterize temperature rise, heating efficiency, and emission performance. It identifies operating conditions that deliver the required hot air while reducing drying energy costs by about 30% compared with LPG systems (Harianto et al., 2025).

The twenty-first study, written by Chaiyachet et al., 2025, validates a cortical screw–plate external fixator for mandibular reconstruction using combined finite element analysis and compression tests. This study evaluates several screw layouts under 600 N biting loads and shows that a 3-screw configuration offers the highest stiffness and reduced cortical stress. It highlights optimized screw placement as an efficient for early-stage mandibular stabilization (Chaiyachet et al., 2025)

The last study, written by Lianto et al., 2025, maps critical success factors for open innovation in Indonesia's manufacturing industry using the Fuzzy Delphi method. This study combines a literature review with expert judgment from 15 academics and practitioners to screen an initial list of factors. It identifies leadership commitment, mutual trust, intellectual property strategy, and governmental support as key enablers of open innovation adoption (Lianto et al., 2025).

Emerging technologies and evolving scientific insights are reshaping how we address society's most complex challenges. In this rapidly changing world, innovation is called not only to solve problems, but also to help steer the direction of progress. IJTech warmly invites you to share your work and insights within this dynamic and evolving landscape.

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