Journal of Applied Science, Engineering, Technology and Management
Vol. 3, Issue 2, December 2025 pp. 01 - 02

Editorial Corner

Artificial Intelligence's role in developing Engineering Systems for a Smarter, Safer and More Sustainable World

Suresh A Kartha
Professor
Department of Civil Engineering
&
Professor and Head
Centre for Sustainable Water Research
IIT Guwahati
Assam, India - 781039.
kartha@iitg.ac.in

Alas the New Year is soon arriving. Everyone is curious about how Artificial Intelligence will shape the forthcoming year. Maybe you will witness in a busy road in Kochi, a beautiful electric scooter weaving through the traffic. It is compact, embedded with sensors, and constantly monitors the traffic. The scooter ensures utmost safety of the rider on its own. In paddy fields in the rural regions of Palakkad, in summer, you may see a modern irrigation network, where the water levels and flows are tracked in real time to ensure fair and equitable distribution of water. The losses due to seepage, evaporation, and distribution are minimized. In the hilly terrains of Ponmudi, a solar-powered robotic lawn mower navigates obstacles with precision, trimming grass without human intervention and ensuring safety in sloping terrains. A scientist from FISAT trolls into the campus in a moving vehicle, in which the tire pressure is monitored wirelessly. The integrated sensors in the scooter alerts the rider as and when the pressure reduces to danger levels. In the highway in Allapuzha, a huge accident occurred. However, within minutes, all the medical vans and ambulances arrived at the site and no causalities are reported. This is possible, because the vehicle that met with accident is having integrated sensor and GPS system that alerted the nearest medical unit, thus possibly saving crucial time. In the busy Lulu mall a blind person may be seen walking and moving effortlessly. He has an intelligent smart stick that is able to interpret the surroundings and alert him of the hindrances. A contractor in Idukki is able to construct a mansion in record time, because he employed artificial intelligence driven sustainable construction practices in the site. These are not isolated innovations; they are part of a larger transformation in which intelligence, connectivity, and sustainability are being woven directly into everyday systems.

The manuscripts in this issue reflect a clear and interesting direction in which the modern engineering systems will evolve. The systems are no longer designed merely to function, but to sense, think, adapt, and protect. Artificial Intelligence, Internet of Things, embedded electronics, and renewable energy are no longer separate domains—they are converging into integrated solutions that respond to real human and societal needs. Whether the goal is inclusivity, safety, efficiency, or environmental responsibility, the common thread is the movement of intelligence closer to where action happens.

Traditional engineering methods repeatedly relied on fixed logic and manual interventions. Often you see lot of constraints in their solutions, that allow only restrictive use for the stakeholders. How wonderful it can be, if the devices can interpret the data and provide solutions on it s own. The coming years you may see the gadgets and machines can interpret data, make decisions, and respond autonomously in real time. This likely shift in technology is visible in the articles presented in this issue. Assistive technologies are evolving from simple aids into perceptive systems capable of understanding obstacles and context. Monitoring infrastructures and functions become less laborious as the periodic inspection gets transformed to continuous digital observations. Vehicles and transport platforms are transitioning from mechanical designs to cyber-physical systems that integrate sensing, computation, and communication.

Despite the use of computational models, devices, and technologies based on concepts and theories, human beings need to recognize that the real-world environments are still uncertain to them. For example, an irrigation canal need not

eISSN 2584-0371

Published: 29-12-2025

always flow under regulated conditions as is envisaged in laboratory conditions and in its design. The pedestrian in a street have her own behavior that can affect the predicting power of a traditional technology. A vehicle battery need not always perform at optimum level and can malfunction. Engineering for such realities requires systems that can adapt, learn, and respond. Intelligence within the finger tips, embedded directly within the devices allows decisions to be made instantly. They can also avoid reliance on distant servers and need not have uninterrupted connectivity. This is especially critical where safety, accessibility, and time-sensitive responses are involved. Some of the findings in the scripts in this issue clearly depicts the same.

Yet, as the above new smart systems grow, concerns on the artificial intelligent applications in day today life rises. Quick connectivity can bother the integrity and security of data, as well as privacy. Autonomy raises questions of reliability and trust. Integration across hardware, software, and networks demands rigorous validation and testing. The challenge is not only to make systems intelligent, but to make them dependable, transparent, and ethical. The papers in this issue demonstrate encouraging progress in this direction. They show practical implementations rather than abstract concepts, and they address real problems faced by individuals, communities, and cities. They illustrate how interdisciplinary thinking—combining electronics, computer science, mechanical design, energy systems, and human factors—can produce solutions that are greater than the sum of their parts.

As editors, we appreciate the authors for coming up with such nice pieces of articles that can provide pathway for new assistive technologies. We hope these works will inspire further research, collaboration, and real-world deployment. The future of engineering will not be built only in laboratories or factories—it will be built in homes, on roads, in fields, and in the hands of people whose lives are shaped by these systems every day. The challenge before us is to ensure that this intelligence is not only powerful, but also inclusive, sustainable, and trustworthy.

(Courtesy: The structure and some of the ideas of this editorial is prepared with the aid of artificial intelligence software)

Dr. Suresh A Kartha

Professor