

SPECIAL ISSUE ON ADVANCES IN SENSORS AND COMPUTATIONAL INTELLIGENCE FOR INDUSTRIAL APPLICATIONS: PART 2

PREFACE



Artificial Intelligence (AI) is transforming how computers perceive, interpret, and interact with their surroundings, while advances in sensor technologies have established sensing as a rapidly evolving interdisciplinary field. Recent developments have further accelerated the integration of Computational Intelligence (CI) into diverse industrial applications. Inspired by human cognitive processes, CI combines complementary computational methodologies to model, simulate, and analyze complex real-world phenomena, enabling more adaptive, efficient, and intelligent solutions.

This Special Issue, entitled “Advances in Sensors and Computational Intelligence for Industrial Applications: Part 2,” published in *Sensors and Materials*, brings together seven studies exploring the synergy between sensing technologies and CI in AIoT-oriented applications.

Tsai *et al.* investigated vision sensing and AI-based facial recognition to enhance surveillance, safety, and automation in educational environments. Chen *et al.* developed a long-range aquaculture monitoring system integrating water-quality sensors, LoRa communication, and CI to monitor water conditions and regulate dissolved oxygen levels in fishponds. C.-J. Lin *et al.* proposed an AI- and vision-based robotic arm control system for automated object placement in screwdriver-bit assembly. Y.-H. Lin *et al.* presented a training-free CI-based methodology for daily energy disaggregation and investigated metaheuristic optimization for appliance classification. Yang *et al.* proposed a practical and cost-effective payload estimation method for heavy vehicles based on strain responses from semi-elliptic leaf springs. Gong *et al.* introduced a hybrid AI framework that combines local detail preservation with global semantic coherence for facial and architectural image inpainting. Fu *et al.* presented an AI-driven generative distraction model combined with motion sensing to enhance exercise enjoyment and reduce perceived exertion through strategic user engagement.

Finally, I sincerely thank all the authors for their valuable contributions and the reviewers for their constructive comments and suggestions. I also extend our special appreciation to Ms. Momoko Kawamura, Chief of the Editorial Department of MYU K.K., for her kind and professional support throughout the review and publication processes.

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