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Editorial

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From the Editor

It is a great pleasure to present **Volume 05, Issue 01 (2026)** of *Machines and Algorithms*. I am pleased to acknowledge the editorial board and all the contributing authors in partnership with me with the privilege of introducing this unique compilation of research. Such intellectual fairness and technical creativity which we observe in these pages are of the noblest standards of our academic community. The modern world of computational science can be characterized by the advantages of the smooth combination of Machines and Algorithms. This concern puts emphasis on the transforming nature of such synergy, especially concerning the concept of Healthcare AI and intelligent monitoring. In the intricacies of the digital era, the topicality of the chosen articles is that they were written in response to urgent issues in society, including the early diagnosis of life-changing pathologies or the possibility of improving the level of societal safety.

The key point in this discussion is the development of Deep Learning (DL) and Computer Vision. The study described here expands the borders of the conventional diagnostic models through the use of multimodal learning and text-image fusion. Such methodologies are becoming necessary to break the Data Scarcity especially in low-resource situations where integration of clinical notes with medical imaging is likely to bridge major gaps in diagnosis. Moreover, transforming medical imaging such as Magnetic Resonance Imaging (MRI) and Fundus Imaging to CNN and Vision Transformers (ViT) indicates that a paradigm shift to automated screening and high-accuracy Retinal Image Classification occurs. Outside the clinical domain, and the combination of the whole-body approach to the real-time gesture recognition provides an example of how multimodal feature extraction may promote inclusivity via high-quality sign language recognition (SLR).

It is an issue where we are able to present five landmark articles and each article provides a unique contribution to our wide category of users, the researchers, clinicians and engineers.

"***Fine-Tuning YOLOv8 to Top-View Vehicle Detection"*** presents a novel idea to manage traffic that is still a pillar of the vision of the Smart City. The work offers a solution of grace and beauty in real time surveillance after fine tuning the YOLOv8 detector to work with aerial data. The authors show that big datasets are not always needed to achieve high precision of detection, but it is competent strategic optimization around the domain. It is most valuable because it can be applied directly to intelligent transportation systems when low latency and high reliability cannot be compromised.

"***Advanced Deep Learning Framework Brain Tumor Segmentation***" has addressed the main issue of inaccuracy in brain tumor subsection and it provides a multi-stage CNN framework. With their hybrid CAB GD model, the researchers attained 85% accuracy rate that was possible through the use of advanced preprocessing measures, such as skull stripping and denoising. The work is an invaluable clinical decision support tool, which will decrease the inter-observer error and could potentially speed up the treatment timetable of patients with tumors of the brain.

One huge leap forward in the area of accessibility is created in "***Real-Time Sign Language Recognition Using MediaPipe Holistic***", which uses the MediaPipe Holistic framework to create 1,662- dimensional feature vectors in a standard RGB video. This method is very cheap and scalable, unlike systems which use

costly dedicated sensors. It offers a strong base of the inclusion technology in education and healthcare in the future, overcoming the communication barrier of the deaf and hard-of-hearing group.

"***Automated Detection of Diabetic Retinopathy Using Vision Transformers***" comes into the field of medicine and solves the problem of diabetic retinopathy (DR) that is a worldwide health concern that requires early detection. The article discusses the effectiveness of Vision Transformers (ViT) to assess the DR severity. Through the use of self-attention mechanisms in the process of detecting the complex features of the retina, the study highlights the ability of ViT based architectures to excel in the screening processes as compared to conventional models. This is a promising avenue in automated classification of retinal images to ophthalmologists.

Finally, "***Bridging Data Gaps: Multimodal Text-Image Fusion to Diagnose Medical Conditions in Low-resource settings***" contains a survey that also suggests solutions to the aforementioned situation in low-resource healthcare settings. The authors give a roadmap on how to deploy AI in the case of scarce data and weak infrastructure by discussing early to late and intermediate fusion architectures. The ethos of this piece is the fact that it is both ethically grounded and practically viable such that even the global south can enjoy advantages of AI.

Articles in this issue are true precursors of Machines and Algorithms. They all show that the technical challenges, including data alignment, computational limitations are also substantial but the possibilities of making a societal change are even higher.

I would wish to compliment and congratulate the best to the authors on their innovative spirit, the reviewers on their critical and constructive commentaries as well as the editorial office and the journal management on their uncompromising pursuit of excellence. The efforts of your team keep us going in the right direction of creating an innovative environment. Our readers will gain insight and hopefully be motivated to do their own research into the future by these contributions.