Special Issue

Deep Learning Techniques for Object Detection and Tracking

Message from the Guest Editor

This Special Issue aims to explore recent advancements in deep learning techniques for object detection and tracking, focusing on fundamental algorithmic developments and real-world applications in autonomous systems, surveillance, robotics, and medical imaging. Emphasis is placed on integrating Large Language Models (LLMs) and foundation Vision–Language Models (VLMs) to enable context-aware object understanding and open-ended visual question answering, bridging semantic language descriptions and visual detection tasks. Contributions investigating prompt-based visual tracking, cross-modal learning, and zero-shot detection using pre-trained foundation models are encouraged. We welcome research and review articles on topics including deep neural networks for object detection and multi-object tracking; transformer-based and attention-driven detection frameworks; real-time tracking and re-identification; multimodal detection using VLMs and LLM-guided perception; self-supervised and unsupervised learning for detection; transfer learning and domain adaptation in tracking systems; applications of foundation models (e.g., CLIP, DINO, SAM, GPT-V) in vision-language tasks.

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As the world of science becomes ever more specialized, researchers may lose themselves in the deep forest of the ever increasing number of subfields being created. This open access journal Applied Sciences has been started to link these subfields, so researchers can cut through the forest and see the surrounding, or quite distant fields and subfields to help develop his/her own research even further with the aid of this multi-dimensional network.

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