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Special Issue Reprint

Feature Papers in Artificial Intelligence

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This Special Issue captures the breadth of current research in Artificial Intelligence, from foundational methodologies to applications that bridge AI with other scientific fields. The twenty-two contributions, from research groups across Europe, Asia and the Americas, span computer vision and multimodal perception, including object detection robustness, image classification, diffusion-based rendering and emotion recognition; language models and human-centred AI, covering conversational agents, retrieval-augmented generation and clinical decision support; trustworthy and interpretable AI, addressing prototype manipulation, explainable fault diagnosis and cognitive bias mitigation; brain-inspired computing, with neuromorphic hardware and spiking neural networks; and applications to forecasting, energy, industrial systems and networks, including load forecasting, electric vehicle state-of-charge prediction, sea surface temperature forecasting and SD-WAN controller placement. A foundational contribution on conformal calibration of entropic operators closes the collection. Collectively, these studies reflect a shared concern with the practical conditions under which AI systems operate reliably, data quality, robustness, interpretability and deployment constraints, rather than benchmark performance alone.

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