Special Issue

Applications of Artificial Intelligence Algorithms for Intelligent Transportation Systems

Message from the Guest Editor

The recent catastrophic accident involving Xiaomi SU7's standard edition, which experienced failures in its vision-only autonomous driving system during nighttime conditions, demonstrates the critical importance of multimodal fusion technology in advanced driver assistance systems. This Special Issue focuses on the mathematical modeling and algorithmic optimization of multimodal perception (LiDAR, radar, vision, and ultrasonic fusion), examining how deep learning-based feature alignment can be synergistically combined with classic safety measures such as probabilistic fusion and Kalman filtering. Key research topics include the dynamic calibration of spatiotemporal sensors through nonlinear optimization coupled with deep learning temporal modeling, uncertainty-aware perception carried out via probabilistic deep networks and adaptive Kalman filtering for occlusion handling, multi-task learning frameworks that jointly optimize feature extraction and safety-critical metrics, and interpretable safety validation using explainable AI techniques to audit black-box model decisions. This Special Issue will advance autonomous driving toward provably safe operation under extreme conditions.

Guest Editor

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Message from the Editor-in-Chief

The journal *Mathematics* publishes high-quality, refereed papers that treat both pure and applied mathematics. The journal highlights articles devoted to the mathematical treatment of questions arising in physics, chemistry, biology, statistics, finance, computer science, engineering and sociology, particularly those that stress analytical/algebraic aspects and novel problems and their solutions. One of the missions of the journal is to serve mathematicians and scientists through the prompt publication of significant advances in any branch of science and technology, and to provide a forum for the discussion of new scientific developments.

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