Proceedings of the International Conference on Industrial Engineering and Operations Management

Publisher: IEOM Society International, USA DOI: 10.46254/NA10.20250120
Published: June 17, 2025

Advancing Connected Automated Vehicles: AI Techniques for Traffic Optimization and Safety

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Abstract

Connected Automated Vehicles (CAVs) have the potential to enhance safety and mobility by reducing the number of crashes on the road and improving the real-time traffic flow. CAV technologies enable vehicles to communicate and exchange information with other vehicles, pedestrians and infrastructure utilizing the Vehicle-to-everything (V2X) communication. Different data processing methodologies were implemented using these data enhance the decision making. However, with the advancements of Artificial Intelligence (AI), research results indicates that AI plays a crucial role in optimizing the decision-making within the CAV networks. This study analyzes and categorizes the AI techniques such as Convolutional Neural Network (CNN), Recurrent Neural Network (RNN), and Deep Reinforcement Learning (DRL) in CAV environments. It also provides insights into the effectiveness of each approach in different traffic applications. This research contributes to the ongoing development of AI-enhanced CAV system for safer and efficient intelligent transportation system.

Keywords

Intelligent transportation system, Connected automated vehicles, artificial intelligence, neural network, traffic applications and deep reinforcement learning.

Biographies

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