

International Conference on Electrical, Computer and Energy Technologies (ICECET 2023),
Cape Town, South Africa, 16-17 November 2023

Machine learning – Imaging applications in transport systems: A review

Adams, A; Abu-Mahfouz, Adnan MI; Hancke, GP

Abstract

Transport systems are fundamental to supporting economic growth, and the need for smarter, safer, more efficient and climate neutral transport systems continues to grow. Maintenance and operation of transport infrastructure is expensive and has many difficulties. In recent years, the application of machine learning to solve problems has been pursued with varying success rates. Many open problems still remain at this stage. This paper provides a review of deep learning applications in transport systems. Multiple deep learning applications are discussed e.g. railway safety, self-driving cars, pedestrian crossing and traffic light detection. Reviewed papers are evaluated in terms of challenges, contribution, weakness, research gaps. Key research questions for future study are proposed: performance optimization, data set improvement and the need for research on real-time performance on edge devices.