

World Conference on

POWER AND ENERGY

November 13-14, 2023 | Bangkok, Thailand



Artificial Intelligence for Traffic Survey Using Unmanned Aircraft System

Tim Chan, Dr. C.H. Cheng, Ray Kung

Logistics and Supply Chain MultiTech R&D Centre Limited

Traffic congestions and the resulting diverse energy emissions are major challenges in many urban areas worldwide. As cities continue to expand, efficient and sustainable transportation systems become important in city development. This work explores the potential of a traffic survey tool using a unmanned aircraft system (UAS) for sustainable road planning and effective traffic control strategies.

The proper design and layout of road networks can directly impact fuel efficiency. Through implementing measures such as optimizing road widths, minimizing unnecessary intersections, and strategically locating access points, traffic road planning facilitates vehicle movement and reduce unnecessary idling and acceleration, leading to lower energy consumption.

Further, advanced simulation and predictive models can analyse traffic patterns, identify bottlenecks, and optimize road designs to minimize energy usage and to enhance city mobility.

Road network planning and intelligent traffic control requires an efficient and reliable survey tool for data capture and collection. In this presentation, an AI Tool for traffic survey using unmanned aircraft system (UAS) will be discussed. Comparing with traditional methods such as manual survey and deployment of ground-based mobile CCTV, UAS for traffic survey covers a much larger area with much less manpower resources. In addition, UAS may be flexibly deployed to remote areas for monitoring of road conditions.

Our UAS achieves more than 95% accuracy in vehicle detection and classification. The system also tracks vehicle driving direction, path, speed and duration. Through a friendly user interface, the tool gives traffic engineers better understanding in the traffic pattern within a traffic junction and provide insight in building simulation tool for traffic road re-design and planning.