SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
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Area: Power and Energy Systems

Host: Prof Dipti Srinivasan

Jointly Organized By
IEEE Computational Intelligence Society (CIS) and
ECE Dept, Green Energy Management & Smart Grid Centre (GEMS)

TOPIC	**:**	**Hybrid Multi-Objective Optimization Approach For Collaborative Truck-Drone Routing Problems**
SPEAKER	**:**	**Mr Qizhang Luo** **Graduate Student, Central South University**
DATE	**:**	**Thursday, 10 June, 2021**
TIME	**:**	**4.00PM to 4.45PM**
WEBINAR	**:**	**Join Zoom Meeting:** **https://nus-sg.zoom.us/j/88319924998?pwd=MG1IV3ZBWENCZUpNWmZ2RElpd1I5QT09** **Meeting ID: 883 1992 4998** **Passcode: 088114**

ABSTRACT

The collaboration of drones and trucks for last-mile delivery has attracted much attention. In this work, we address a collaborative routing problem of the truck-drone system, in which a truck collaborates with multiple drones to perform parcel deliveries and each customer can be served earlier and later than the required time with a given tolerance. To meet the practical demands of logistics companies, we build a multi-objective optimization model that minimizes total distribution cost and maximizes overall customer satisfaction simultaneously. We propose a hybrid multi-objective genetic optimization approach incorporated with a Pareto local search algorithm to solve the problem. Particularly, we develop a greedy-based heuristic method to create initial solutions and introduce a problem-specific solution representation, genetic operations, as well as six heuristic neighborhood strategies for the hybrid algorithm. Besides, an adaptive strategy is adopted to further balance the convergence and the diversity of the hybrid algorithm. The performance of the proposed algorithm is evaluated by using a set of benchmark instances. The experimental results show that the proposed algorithm outperforms three competitors. Furthermore, we investigate the sensitivity of the proposed model and hybrid algorithm based on a real-world case in Changsha city, China.

BIOGRAPHY

Qizhang Luo received the B.S. degree and the M.S. degree in Traffic and Transportation Engineering from Central South University, Changsha, China, in 2015 and 2018, respectively. He is currently pursuing the Ph.D. degree in School of Traffic and Transportation Engineering, Central South University. His current research interests include computational intelligence and scheduling, with a focus on their applications in the traffic and transportation field.

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Time: 10th June, 2021 04:00 PM to 04:45 PM Singapore

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