Seminar Notice

Organized within the course of Eco-Sustainable Systems Optimization
Ph.D School in Engineering Science
February 19, 2024
10:30—12:30, 155/8
Faculty of Engineering, Università Politecnica delle Marche

The Green and the Electric Vehicle Routing Problem Variants and solution methods

Prof. Maurizio Bruglieri
Dipartimento di Design, Politecnico di Milano

Abstract. Recent climate change forces us to think, reinvent, transform transport systems. Particular attention must be focused on the road transport sector, which is currently responsible for a significant amount of $C0_2$ emissions. An ecological transition, especially in the mid-haul Logistics, involves the distribution companies who must transform their fleet, passing from traditional vehicles to Green Vehicles (GVs) (e.g., fueled by hydrogen, biofuel, etc) or Electric Vehicles (EVs). Therefore, some of the most common decision problems must be addressed by considering the fleet peculiarities (i.e., their limited tank/battery capacity). In a traditional VRP, it is assumed that a fleet of traditional vehicles must be efficiently routed for serving a set of customers spread on the territory. Each customer has a given demand and must be served by one and only one vehicle without exceeding its cargo capacity. Usually, each customer also specifies a time window for receiving the service. In the case of GVs/EVs, we need to also consider that they may require to be refueled/recharged en-route due to their limited drive range. The seminar aims to present some variants of both the Green and the Electric VRP with focus on the modeling and the methodological aspects. Particular attention is given to variants with both private and public capacitated stations (i.e., no more than a certain number of vehicles can be refueled/recharged at the same station simultaneously) and finally, that one with a realistic energy consumption model.

Short Bio: Maurizio Bruglieri is an associate professor in Operations Research at Politecnico di Milano, where he teaches this discipline in several graduate courses. His main research interests are in the modeling and development of metaheuristics to solve NP-hard combinatorial optimization problems, especially in the transportation sector (e.g., vehicle relocation for carsharing, GVRP, EVRP).

For info: Prof Ornella Pisacane (o.pisacane@univpm.it)