

Routing fleets of very heterogeneous vehicles

Intended supervisory team: Dr Maria Battarra, Professor Gunes Erdogan,
Professor Gilbert Laporte

Will it be drones, self-driven vehicles, occasional drivers or some other new and exciting technology to change the face of logistics in the coming ten years?! What seems certain is that scheduling of deliveries will have to be effective, quick and reliable, if any small to medium business will want to compete with delivery services from large corporations, as Amazon. How can small and medium enterprises collaborate to effectively raise to this challenge? Routing algorithms capable of integrating a variety of vehicles have not been widely tested in the literature, and cannot be solved with an off-the-shelf software. Ad hoc software would be too expensive and not within the reach of small companies. How can an algorithm integrate a variety of vehicles with different constraints and costing functions, without the need to extensively change the code? In this PhD, we will study effective metaheuristic algorithms that will be able to raise to this challenge and develop a modular yet effective code capable of solving routing algorithms with very diverse fleets of vehicles.

The supervisors for this project will be Dr Maria Battarra, Prof Gunes Erdogan and Gilbert Laporte, experts in the field of Vehicle Routing Problems. The ideal candidate will have a background in Computer Science or will be familiar with computer programming (C/C++/JAVA/Python are preferable, in the order), and did take some classes of Operational Research during their prior studies.