

AVIS DE SOUTENANCE DE THÈSE

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soutiendra sa thèse de doctorat sur le sujet :

Selective Vehicle Routing Problems: Cluster and Synchronization Constraints

préparée au sein de l'unité de recherche :

HEUDIASYC UMR CNRS 7253

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à l'université de technologie de Compiègne, bâtiment du génie informatique, salle GI42

devant le jury composé de :

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Résumé

Transportation and logistics is a major component of the economy of today's society. Vehicle Routing Problems (VRPs) is a family of Combinatorial Optimization Problems generally used to solve different issues in transportation systems. The challenge in Vehicle Routing Problems consists in designing intelligent techniques to find the best solutions without enumerating all the search space. In the context of this thesis, we are interested in resolution approaches for hard optimization problems. We distinguish two categories of approaches: exact methods that aim at finding the best solution, whereas heuristic methods try to find good quality solutions at reasonable computational times. In this thesis, we focused our attention on a specific variant of VRP called the Team Orienteering Problem (TOP), in which a limitation is imposed on the total distance of vehicles. In a first place, we introduced a new generalization for the TOP that we called the Clustered TOP (CluTOP). To solve this variant, we proposed an exact scheme based on the cutting plane approach with additional valid inequalities and preprocessing technics. We also designed a heuristic method based on the *order first-cluster second* approach for the CluTOP. The second problem treated in this work is called the Synchronized Team Orienteering Problem (STOPTW). A heuristic method based on the GRASP approach was proposed which led to a very outstanding results compared to the literature. The last variant of the TOP tackled in this thesis is called the Set Orienteering Problem (SOP). An exact method of type branch-and-cut was proposed along with a Memetic Algorithm as a heuristic approach.

