

# AVIS DE PRESENTATION DE TRAVAUX EN VUE DE L'OBTENTION DU DIPLÔME D'HABILITATION À DIRIGER DES RECHERCHES

(Arr t  du 23 novembre 1988)

## Monsieur Mustapha OUDANI

pr sentera ses travaux en vue de l'Habilitation   Diriger des Recherches,

sp cialit  **INFORMATIQUE**

sur le th me suivant :

### Models and algorithms for location and routing problems in transportation

le **28/01/2025   09h00**

lieu : **POLYTECH ANGERS | Salle du Conseil | 62, avenue Notre-Dame du Lac | 49000 ANGERS**

Le jury sera compos  de :

Monsieur Abd rafi CHARKI, Ma tre de Conf rences HDR Universit  d'Angers, Directeur de Recherche

Monsieur Cyril FONLUPT, Professeur des Universit s Universit  du Littoral C te d'Opale, Rapporteur

Monsieur Adrien GO FFON, Professeur des Universit s Universit  d'Angers, Examineur

Monsieur David LEMOINE, Professeur des Universit s IMT Atlantique, Rapporteur

Monsieur Marc SEVAUX, Professeur des Universit s Universit  de Bretagne Sud, Rapporteur

Madame Dalila TAMZALIT, Professeure des Universit s Nantes Universit , Examinatrice

### R sum  des travaux

I am a professor-researcher specializing in modeling and optimization of various real-life challenging problems. My research focuses on modeling and optimization of intermodal transport networks, emphasizing network design, vehicle routing, and minimizing environmental impacts. It involves locating hubs, intermodal terminals, and reducing urban vehicle routing costs. Methodologically, mathematical programming models are used, including linear, integer, and mixed linear programming. To solve large problem instances, metaheuristics are employed, incorporating machine learning algorithms for initial solutions. For example, K medoids clustering is used to initialize a simulated annealing algorithm for the p-hub center problem with an emissions budget constraint. In multi-objective problems including vehicle routing and green network design, metaheuristic-generated solutions are classified using multi criteria decision methods (MCDM). My research combines operational techniques, such as hub allocation and vehicle routing, with environmentally sensitive parameters, ensuring efficient problem-solving while balancing service quality and environmental impact. By focusing on Pareto optimality and using the NSGA-II meta-heuristic, decision makers are offered optimal solutions, addressing trade-offs between service quality and environmental considerations.