Research Grants for PhD students from the China Scholarship Council

Information Form (please read the guidelines carefully on the website www-csc.utt.fr)

Supervisor's name : DRIDI Given names : Mahjoub

Status (prof., assistant prof., …) : Professor HDR

Laboratory :	Connaissance et Intelligence Artificielle Distribuées - CIAD	Website address : http://www.ciad-lab.fr
Institution :	Université de Technologie de Belfort-Montbéliard	Website address : www.utbm.fr

Scientific competence of the supervisor:

Transportation Science (Traffic modeling, simulation and control); Operation Research; combinatorial optimization

Two major publications in the field proposed for the PhD :

1. Driving simulator study for evaluating the effectiveness of virtual warnings to improve the safety of interaction between cyclists and vehicles. Transportation research record. 2022 Apr;2676(4):436-47.
2. Real time bicycle simulation study of bicyclists' behaviors and their implication on safety. Tech. rep., Western Michigan University. Transportation Research Center for Livable

Website address of the personal page :

Supervisor's email : mahjoub.dridi@utbm.fr

Description of the research work proposed for a PhD ***Topic # (see list) :*** VI

Title : Design of Intelligent Cycling Ecosystems: Optimization of Infrastructure, Adaptive Navigation, and Immersive Simulation for Sustainable and Safe Urban Mobility

Subject :

This thesis proposes an integrated approach to improve urban cycling mobility by combining the optimization of cycling infrastructure, the development of personalized navigation systems, and virtual reality simulation to study and optimize interactions between cyclists and other road users. Using operational research methods, combinatorial optimization algorithms, and cutting-edge technologies (virtual reality, urban simulation with SUMO), this project aims to address current challenges related to inadequate infrastructure, inefficient navigation, and complex interactions. The selected candidate will closely collaborate with two other PhD students in the laboratory, recruited under the CSC project, who are working on the same theme but with complementary perspectives, particularly using reinforcement learning to address specific aspects of urban mobility. Expected outcomes include optimization models for infrastructure, a personalized navigation application, an immersive VR platform, and algorithms to reduce conflicts. This work will contribute to safer, more comfortable, and more sustainable mobility, while offering opportunities for multidisciplinary collaborations and academic or industrial career prospects.

Keywords :

Artificial intelligence, Operations Research, Urban simulation , Road safety, Cyclist-pedestrian-vehicle interactions, virtual reality, Cycling infrastructure, Navigation systems

Expected collaborations :

collaborations with collegues from the College of Transportation &Logistics Engineering, Xinjiang Agricultural University

Background required from the applicant :

Phyton/C/C++/Java programming (one of these programming language)

Existence of a PDF file detailing the proposal ("yes" or "no") : yes

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