

(Doctorat : D₄)
RESUME DE THESE¹

Nom et Prénom du candidat : **Abdelhak KHADRAOUI**

Formation Doctorale : Recherche et Développement en Sciences & Ingénierie

Etablissement de domiciliation : ENSAM-Meknès

Centre d'Etudes Doctorales : Sciences et techniques et sciences médicales

Titre de la thèse	Artificial Intelligence for Vehicle Driver Behavior Monitoring
Discipline/ Spécialité	Sciences de l'ingénieur / Informatique
Nom et Prénom du Directeur de thèse	EL MOUKHTAR ZEMMOURI
Structure de Recherche/Etablissement d'Attache	Équipe ModEC, Laboratoire LM2I, ENSAM Meknès
Nom et Prénom du responsable de la Structure de Recherche	EL MOUKHTAR ZEMMOURI
Nom du Codirecteur de thèse	MOHAMMED DOUIMI
Structure de Recherche/Etablissement d'Attache	Laboratoire LM2I, ENSAM Meknès

Résumé : (150 mots)

This work proposes solutions for monitoring driver behavior, namely drowsiness and distraction, which have been established to be the prominent causes of accidents worldwide. The proposed methodology integrates computer vision and deep learning methods to accurately detect driver drowsiness and distracted driving, which to improve road safety.

The first contribution focuses on real-time driver drowsiness detection, proposing a deep learning architecture based on residual and feature pyramid networks. The trained model is integrated into a system that can alert the driver when drowsiness is detected, with the aim of preventing drowsiness related accidents.

The second contribution focuses on automating the detection and classification of driver distraction. Two models are proposed for this purpose: The first model combines human pose estimation using the MoveNet model with common classifiers. The second model utilizes the pyramidal scene analysis network for classifying distracted drivers. This network incorporates a pyramid analysis module that gathers contextual information from different regions to enhance semantic segmentation.

Overall, the two proposed contributions rely on deep learning techniques to address problems related to monitoring driver behavior.

Mots clés : Computer Vision, Deep Learning, Drowsiness Detection, Distraction Detection, Active Security.

¹ Le présent résumé sera publié conformément à l'article 31 des NSPCD- 2023.