

ADMISSION TO DOCTORAL STUDIES

Session September 2024

Field of doctoral studies: Automotive Engineering

Doctoral supervisor: Prof. dr. ing. Florin Gîrbacia

TOPICS FOR THE ADMISSION TO DOCTORAL STUDIES

TOPIC 1: *Development of a hybrid ADAS system based on human biopotentials*

Contents / Main aspects to be considered

The objective of this PhD thesis will be to develop new biopotential-based multinodal hybrid interfaces for ADAS systems

Recommended bibliography:

- Peng, Y., Xu, Q., Lin, S., Wang, X., Xiang, G., Huang, S., & Fan, C. (2022). The application of electroencephalogram in driving safety: current status and future prospects. *Frontiers in psychology*, 13.
- Ban, S., Lee, Y. J., Kim, K. R., Kim, J. H., & Yeo, W. H. (2022). Advances in Materials, Sensors, and Integrated Systems for Monitoring Eye Movements. *Biosensors*, 12(11), 1039.
- Stampf, A., Colley, M., & Rukzio, E. (2022). Towards Implicit Interaction in Highly Automated Vehicles-A Systematic Literature Review. *Proceedings of the ACM on Human-Computer Interaction*, 6(MHCI), 1-21.

TOPIC 2: *Development of a vibrotactile haptic system for driver advanced assistance.*

Contents / Main aspects to be considered

The general objective of this doctoral thesis will be to develop a haptic system with dynamic vibrotactile feedback, which will allow the implementation of new driver assistance systems.

Recommended bibliography:

- Gîrbacia, F., Voinea, G. D., & Gîrbacia, T. (2019). Vibrotactile Patterns for Smartphone Based ADAS Warnings. In *Proceedings of the 4th International Congress of Automotive and Transport Engineering (AMMA 2018) IV* (pp. 122-127). Springer International Publishing.
- Noubissie Tientcheu, S. I., Du, S., & Djouani, K. (2022). Review on Haptic Assistive Driving Systems Based on Drivers' Steering-Wheel Operating Behaviour. *Electronics*, 11(13), 2102.

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