Post-doctoral position

Title: Innovative Driving cabin for trains: European survey to define new human-machine interactions

Advisor: S. Enjalbert & F. Vanderhaegen (UPHF-LAMIH UMR CNRS 8201)
University: UPHF – University Polytechnique Hauts-de-France
Project: CARBODIN: Car Body Shells, Doors and Interiors
Position: Post-doctoral position at UPHF, monthly gross salary: 2600€

Context

The success of the European rail system requires profitable passenger trains with high capacity and reliability. The development of these very demanding trains requires a concerted effort. The European H2020 CARBODIN project contributes to this effort by combining the results of calls for Shif2Rail projects such as CFM-IP1-01-2019 or CFM-IP1-01-2017 to manufacture car body shell, doors and interiors.

Mission

One of the main points of the CARBODIN project concerns the train interiors. CARBODIN must indeed study the design of attractive train interiors using a configuration tool based on virtual reality. This will be supplemented by innovative manufacturing supports for interior components with the study of the integration of low voltage circuits. More precisely, CARBODIN also aims to improve the performance of future Human Machine Interactions (HMI) from a European survey to identify the interactions between automated systems and drivers based on gesture or voice control for example. To carry out the objectives, CARBODIN benefits from a solid multidisciplinary consortium, made up of 14 partners from 7 countries. The post-doctoral project will take place at the Université Polytechnique Hauts-de-France in Valenciennes, France.

The candidate will organize a two steps survey and analyse the results for the CARBODIN project in collaboration with the project partners, in particular with UIC from Paris and EURECAT from Barcelona. The first action (survey) consists in defining and investigating the feedback on the degree of automation and interaction technology for train drivers based on an interactive questionnaire taking care of different criteria such as culture, preferences, or experiences. The second step depends on the analysis of the results of the first survey and will consist in defining and implementing a toolbox for testing human factors and user acceptance in new human-machine interactions mainly based on sound, voice or gesture. The analysis of

the second survey results will aim at building a recommendation for the definition of future HMI in train cabin.

The objectives of the post-doctoral are:

- To investigate the questions addressed by the two steps survey,
- To implement the toolbox including sound, vocal, gesture, tactile and haptic features for the needs of second survey,
- To deliver recommendations about the relevance of HMI for future driving cabin, and how adapted or performant could be their combination,
- To realize scientific publications in highly ranked international journals,
- To purse existing collaborations between partners of the consortium and train manufacturers.

Skills

PhD in Automatic control or Computer Sciences or Industrial Engineering, and more precisely on used-centred design is required.

Competencies in human-centred engineering of systems and, if possible, on transportation domain are welcome. Moreover, experience into driving surveys and/or experimental protocols will be greatly appreciated.

Duration

September 2020, 12 months.

How to Apply

Please send a CV, a covering letter, your list of publications, and a letter(s) of recommendation to simon.enjalbert@uphf.fr

The CARBODIN project has received funding from the Shift2Rail JU under the European Union's Horizon 2020 research and innovation programme, under Grant Agreement 881814.

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