

Mobility in a Globalised World

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Time-of-flight Hand Gesture Data Analysis in an Automotive Context

by

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Abstract: In this paper we consolidate a line of research contributed by the Computational Neuroscience Lab of the Ruhr West University of Applied Sciences. We investigated vehicular human machine interaction via freehand gesture recognition. Using means of deep learning and time-of-flight sensor depth data, we aimed to develop an in-car control device for an infotainment system running on a mobile tablet computer. We assessed socio-technical qualities of our product by performing user studies; with a standardised Lane Change Test and an INTUI questionnaire, we measured both the impact of our device on the motorists driving behavior as well as the sensation of intuitiveness that our technology conveys. The models we present in this paper reached and surpassed former state of the art to the best of our knowledge and provide reasonable intuitive handling with minimum driver distraction.

JEL Classification: D81, D85, L62

Keywords: vehicular human machine interaction, freehand gesture recognition, time-of-flight sensor

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