

Data of Supervisors of the Doctoral School at WPUT

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Scientific Discipline(s):	Information and Communication Technology
Research Areas (max. 2000 characters):	<p>Research interests include visual, cognitive, and experimental perception and broadly understood computer simulations, with a particular focus on simulations in the automotive industry. My work involves acquiring, processing, and analyzing cognitive signals, particularly eye-tracking signals, ECG, and fNIRS, which are used to assess cognitive load. The data obtained allows for a better understanding of human cognitive mechanisms and their dependence on factors such as stress and fatigue, which are crucial in designing efficient user interfaces. A key aspect is eye-tracking to analyze visual perception patterns and assess the quality of visual effects. The research methodology is experimental-analytical, with perceptual experiments forming its foundation. The results of these experiments are used to model cognitive processes and adjust algorithm parameters so that the obtained visual effects align with user expectations. An essential part of the analysis is the evaluation of the effectiveness of visual communication, including the development and validation of metrics for the invasiveness of visual content. Statistical analysis methods are applied to ensure the reliability of results, enabling an objective interpretation of data and verification of the correctness of obtained results. Currently, research focuses on analyzing the correlation between human perception and cognitive style, as determined by the FRIS tool, using biosensors such as eye trackers, ECG, and fNIRS.</p> <p>The findings of these studies are applied in the optimization of graphical interfaces, allowing for their adaptation to the user's cognitive load. A particular application area includes medical interfaces and automotive systems, where dynamic interface modification can significantly improve user comfort and safety.</p>
Keywords (max. 10):	Visual perception, eye-tracking, cognitive signals, cognitive load, user interfaces, automotive, user-study, HCI, computer simulations