

Jan Peters wins first prize at IROS 2020



Auf einen Blick

- ☑ International Conference on Intelligent Robots and Systems (IROS)
- ☑ Driver seat for highly automated vehicles presented
- ☑ Goal: safe human-machine cooperation
- ☑ match student Jan Peters received first prize in the Industrial Applications category

26. 2021

match | To make future highly automated vehicles safer, scientists have equipped a driver's seat with soft pneumatic actuators. Jan Peters from match presented the project at the international robotics conference IROS and won a prize.

A driver's seat designed to ensure safe human-machine cooperation in highly automated vehicles was presented by Jan Peters at the International Conference on Intelligent Robots and Systems (IROS). The 26-year-old wrote his master's thesis in mechanical engineering at the Institute of Assembly Technology (match), and now works as a research assistant at match.

With his poster, which he submitted to the IROS workshop "Application-Driven Soft Robotic Systems: Translational Challenges," Jan Peters won first prize in the Industrial Applications category.

Autonomous vehicles not until 2040

Even optimistic estimates suggest that the first fully autonomous vehicles are not expected until 2040. Until then, cars will be equipped with more and more sophisticated functions for automated driving. These highly automated vehicles will be able to cover certain distances autonomously. Nevertheless, the person driving will still have to take back control of the vehicle in some cases.

These control transitions currently still lead to safety risks, as the person driving does not have a fully comprehensive overview of the driving situation when prompted to do so.

Tactile signals increase safety

To increase safety, researchers at match have developed a special driver seat in collaboration with University College London (UCL). It prepares the person driving for transfers of control – through tactile signals generated by soft pneumatic actuators. These tactile signal patterns give the person driving an intuitive feel for the current driving situation, increasing situational awareness.

Test in the driving simulator

For this purpose, scientists at match – including Jan Peters – have equipped a driver's seat with soft pneumatic actuators and integrated the seat into a driving simulator set up for this purpose. In this simulator, test persons can evaluate the user-friendliness and acceptance of the novel assistance system.

In the further course of the project, the driver's seat will be used in a professional driving simulator at University College London to establish objective correlations between tactile signals and the situational awareness of driving subjects. The evaluation of these driving tests will include both the direction of gaze (eye-tracking) and physiological parameters such as brain waves (EEG signals) and muscle activations (EMG signals).

by Susann Reichert and Philipp Jahn

E-Mail: peters@match.uni-hannover.de

Tel.:

Webseite: match.uni-hannover.de