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## Can't you control more with the motorcycle grip?

Modern motorcycles are increasingly relying on infotainment - from navigation and telephony to music. There are also helmets with integrated communication systems. Operating these systems while riding poses a higher risk on two-wheelers than in a car, as it is even more important that both hands are on the handlebars in critical situations. Cologne University of Applied Sciences and the Brehmer Group are therefore working on an alternative way of controlling systems directly via the motorcycle grip.

Traditional infotainment systems on motorcycles are operated via buttons on the handlebars and helmet or, increasingly, via touch screens. This takes the rider's eyes away from the road far more than in a car, explains Prof. Dr. Matthias Böhmer from the Cologne Institute for Digital Ecosystems (CIDE) at Cologne University of Applied Sciences. Another example is helmet communication: one hand must be removed from the handlebars to control the volume. If a dangerous situation arises, both hands may not be on the handlebars at the crucial moment, which increases the risk of an accident.

In a research and development project on human-technology interaction, a team from CIDE is therefore working together with the Brehmergroup on a solution to minimize these safety risks. The starting point is a patent for heated grips, which Thomas Brehmer, founder of the Brehmergroup, received back in 2006 and is already being used as standard by one manufacturer. This year, Brehmer and technical manager Moritz Schmidt expanded on this development and patented the first intelligent heated grip with grip recognition. In the new project, the researchers also want to equip this technology with grip and gesture recognition based on artificial intelligence as well as haptic feedback.

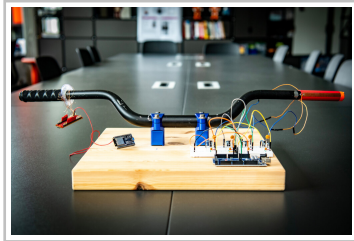
"The sensors should determine how many fingers are on the handle and recognize gestures such as swiping or tapping. This would make it possible, for example, to answer a call by squeezing the handle. The blinker could be activated by swiping your thumb from the inside to the outside of the handle," explains Böhmer. The haptic feedback could support the navigation function, for example by causing the left handle to vibrate quickly when a left turn is required. "The system is designed to make the operation of various functions more intuitive and at the same time significantly increase driving safety."

The project partner has already been able to demonstrate that the foil of heated grips can be used to add an input field. This simplifies the technical implementation and makes it relatively cost-effective, emphasizes the TH Köln. In the future, the new technology should also be transferable to other two-wheelers such as e-bikes or scooters.

The research and development project "Development of novel grips with capacitive input field and active haptics for more efficient and safer hands-on detection and interaction on electrified two-wheelers" (HoDi) is headed by Prof. Dr. Matthias Böhmer from the Cologne Institute for Digital Ecosystems (CIDE) at TH Köln. The idea is being funded by the Federal Ministry for Economic Affairs and Energy via the Central Innovation Program for SMEs (ZIM) with around 220,000 euros until November 2026. (aum)

## Images for article

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The first prototype of an AI-based gesture control with haptic feedback for motorcycle grips, which is being developed by a team from Cologne University of Applied Sciences in cooperation with the Brehmergroup.

Photo: Olaf-Wull Nickel/TH Köln via Autoren-Union Mobilität

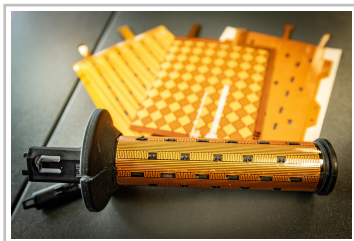
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The first prototype of an AI-based gesture control system with haptic feedback for motorcycle grips, which is being developed by a team from Cologne University of Applied Sciences in cooperation with the Brehmergroup. Sensors are used to determine how many fingers are on the grip and recognize gestures such as swiping or tapping.

Photo: Olaf-Wull Nickel/TH Köln via Autoren-Union Mobilität

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A team from Cologne University of Applied Sciences is working with Brehmergroup to develop an AI-based gesture control with haptic feedback for motorcycle grips. The project partners have already demonstrated that the heating foil already built into the grips of most motorcycles can in principle be used to add an input field.

Photo: Olaf-Wull Nickel/TH Köln via Autoren-Union Mobilität

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The first prototype of an AI-based gesture control with haptic feedback for motorcycle grips, which is being developed by a team from Cologne University of Applied Sciences in cooperation with the Brehmergroup.

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