

From gaming to medical technology: special Jugend forscht 2024 prize for data glove with innovative sensor technology

- **Leander Mikat (19) from Schleswig-Holstein receives VDE Special Prize at Jugend forscht 2024**
- **The prototype of a data glove built for the competition is significantly cheaper than standard market models thanks to capacitive sensors**
- **After Jugend forscht, Mikat wants to continue working on optimizing the technology and develop a market-ready product with a sponsor**

(Frankfurt a. M./ Bremen, 04.06.2024) Get your head around it – this is the motto under which almost 10,500 children and young people have registered for Jugend forscht 2024, Germany's largest competition for young scientists. This is around twelve percent more than last year and shows: Interest in STEM subjects is on the rise. A total of 175 STEM talents reached the final of the 59th edition of the event with a total of 107 research projects. At the end of May, Leander Mikat (19) from Schleswig-Holstein presented a prototype for a data glove to control digital applications at Germany's largest science center, the experimenta in Heilbronn. This was awarded the VDE special prize of 1,000 euros for work in the field of electronics, energy or information technology. It is awarded for technical solutions that are innovative and have a strong practical relevance. The VDE has been supporting Jugend forscht since the 1996/97 round of the competition.

Motivation: Data gloves have so far been expensive or inaccurate

In the beginning, there was great enthusiasm for so-called data gloves, which improve the experience of computer games, for example, or are used to control robots in industry. The catch with the products available to date for Leander Mikat: "Either the products are very expensive, with a starting price for consumer models of around 600 euros, or they restrict the mobility of the fingers, which is uncomfortable and no fun." Mikat came across a scientific paper on so-called

capacitive sensors on YouTube. That was the starting point. If these sensors are attached to two points on the joint of a finger, for example, they stretch as soon as the joint is bent. "This stretching causes the capacity of the sensors to change in the pico range, i.e. in tiny increments. In order to be able to read out the information via software, I used an oscillating circuit that changes its frequency when stretched and allows conclusions to be drawn about the change in capacitance." Mikat has built a prototype for Jugend forscht that is able to control a virtual hand on a screen.

Future plans: further development and looking for a sponsor

Although Leander Mikat has not drawn up a detailed calculation, the costs for the prototype were around 30 euros. Measured against standard market prices, the technology could therefore be used much more cheaply and at the same time would enable work to be carried out just as precisely as previously available models. This means that both products for consumer applications and applications in medical technology, where the focus is on monitoring patients, for example, can be presented differently.

Mikat has a clear vision of where he wants to go in the future: "I have a newsletter on my website v-glove.de, which I use to communicate my next steps. For example, I would like to improve the sensors by using different materials, record finger spreading movements and switch from a wired model to a wireless model. Ideally, I would like to find a sponsor and continue working on this project full-time." This is not entirely unlikely, as Mikat has already been approached by various companies at Jugend forscht – including a company that also develops data gloves.

About VDE:

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Our passion is the advancement of technology, the next generation of engineers and technologists, and lifelong learning and career development "on the job". Within the VDE network more than 2,000 employees at over 60 locations worldwide, more than 100,000 honorary experts, and around 1,500 companies are dedicated to ensuring a future worth living: networked, digital, electrical. Shaping the e-dialistic future.

The VDE (VDE Association for Electrical, Electronic & Information Technologies) is headquartered in Frankfurt am Main. For more information, visit www.vde.com

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