

Elisabeth Wilhelm
Assistant Professor
Robotics and image-guided minimally-invasive surgery (ROBOTICS)
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Biography

Elisabeth received her diploma (2012) and the doctoral degree (2015) in mechanical engineering from Karlsruhe Institute of Technology. During her PhD project she developed a large-scale microfluidic Braille display. This display consists of novel cheap latchable phase-change actuators. The Project was carried out at the Institute of Microstructure Technology under supervision of Prof Dr Volker Saile and Dr Bastian E. Rapp. In 2016 she was awarded the “Deutscher Studienpreis der Körberstiftung” for her doctoral thesis.

From 2015 to 2016, she was visiting researcher at the Human Robotics Group at Imperial College London. This visit was financed by a scholarship of the German Academic Exchange Service. Under the supervision of Prof Dr Etienne Burdet, she developed a robot for investigating tactile sensation in patients with neurological diseases.

From 2016 to 2020, Elisabeth worked as postdoctoral researcher in the Sensory-Motor Systems Lab at ETH Zürich under the supervision of Prof Dr Dr h.c. Robert Riener. She has been responsible for developing several robotic beds, which provide sensory stimulation or postural interventions to patients with various sleep disorders. Some of these beds, were equipped with in-built sensors. For these sensors, she developed algorithms by using machine learning techniques. These algorithms enable the bed to react to the needs of the sleeping user in a closed-loop manner. One of these beds – the Anti-snoring bed – has been awarded the “Internationaler Forschungspreis zum primären Schnarchen”.

In 2020, Elisabeth joined the university of Groningen as Assistant Professor (Rosalind Franklin Fellow) in Control of Robotic Systems for Assistance and Rehabilitation.

Research Interests

Her research focuses on robotics for rehabilitation and assistive devices, artificial sensory stimulation, real-time bio-feedback and human-machine interaction. In particular, she uses artificial sensory stimulation to help people with neurological diseases and sleep disorders. To achieve this, she combines microtechnology with robotics and artificial intelligence. A key aspect of her research is to combine advanced bio-signal processing with machine learning techniques to develop algorithms that allow robots to react to the physiological state of the human user in closed-loop manner.