

## **Bachelor's / Master's Thesis**

### **Design and Manufacturing of a Wirelessly Controllable Vibration Wristband for Vibrotactile Feedback Generation**

#### **Thesis description:**

Numerous studies and experiments in the fields of neuroscience and sensorimotor research emphasize the use of haptic feedback. This is particularly relevant in investigations of motor function and neural activity in paralyzed patients, such as those suffering from spinal cord injuries (SCI) or strokes.

A common application involves the use of small vibration motors, which can be controlled by a microcontroller. However, a significant drawback is the current reliance on wired connections between the motors and the microcontroller. This often results in cumbersome application of the vibration motors and discomfort due to the presence of multiple wires.

The aim of this thesis is to design, develop, and produce a completely wireless vibration bracelet that can be controlled via an application. The bracelet should allow for flexible adjustment of the vibration zones, intensity, and frequency. Additionally, it should be easy to put on and provide a comfortable wearing experience.

Another aspect of this work involves conducting a user study to evaluate the various features and characteristics of the finished product.

#### **Requirements:**

- Preferred study programs: Mechanical / Electrical Engineering, Mechatronics, Informatik or any other comparable study program
- Basic knowledge in CAD and 3D printing is beneficial
- Proficient Microcontroller skills
- Basic Programming skills
- Ability to work independently and competent time management skills

**Supervisor:**

Yannick Finck, M.Sc.

**Application:**

Please provide a short CV and a transcript of records to [nsquared@fau.de](mailto:nsquared@fau.de).