

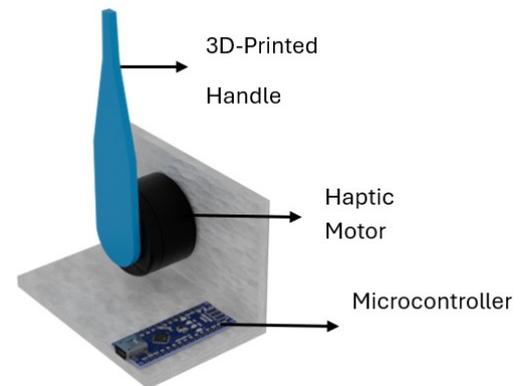
Development of a Force Feedback Device

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Task Description:

Force feedback devices are implemented in the field of robotic telemanipulation and virtual reality to provide high fidelity immersion. As a part of an ongoing research project, the chair of handling and assembly technology is developing a force feedback glove. As preliminary work, a force feedback device with 1 degree of freedom must be developed and tested.

The device should provide virtual forces to the user. The motor for the force feedback, potentiometer for measuring position as well as the microcontroller to control the motor are already available. In this work, the components should be combined and an algorithm for force feedback must be developed. An similar project can be seen here:

<https://hapkit.stanford.edu/>

Focus of the work:

- Design and 3D-Printing of the Handle,
- Assembly of the haptic device,
- Completing the electric circuit (motor and potentiometer with the microcontroller),
- Controlling the motor,
- Developing a simple algorithm for force feedback

Requirements:

- Basic knowledge of programming
- Basic knowledge of electronics

Knowledge Improvement:

- Haptic rendering
- Software development
- 3D printing