

Characterizing the Influence of Cyclic Loading onto the Electrical Resistance of Flex-Lines

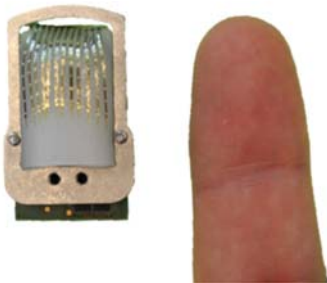
Bachelor Thesis

Keywords

Artificial robotic finger, flex-lines, electrical resistance, long term testing

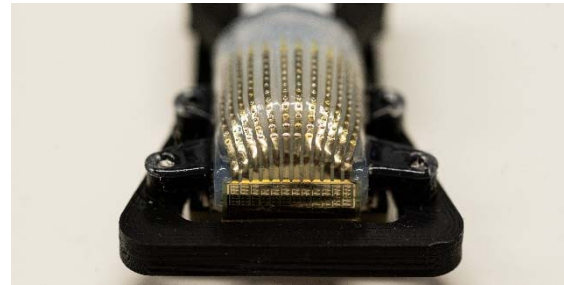
Motivation

The overall goal of this project is the development of an artificial robotic skin which integrates tactile sensing capabilities into an artificial finger. More than 100 sensing units, electrically connected by flex-lines, are distributed in an array over the finger. The sensors as well as the flex-lines are subject to various mechanical loads throughout the lifetime of the finger.



Project

The goal of this bachelor thesis is to subject existing flex-line test structures to mechanical load cases simulating long-term usage of the finger. Therefore, realistic load-cases must be identified, and a mechanical test setup must be developed. To evaluate the influence, you will measure the electrical impedance of the flex-lines over long-term cyclic loading using a probe station.



Tasks and Learning Opportunities

- Mechanical design and prototyping of hardware with the help of CAD/3D Printer/Laser cutter.
- Testing and evaluating the electrical impedance over thousands of mechanical loading cycles.

Your Profile

- Student of D-MAVT or similar, pre-existing CAD knowledge is advantageous
- Motivated to work on an interdisciplinary topic
- Structured and independent working style, innovative and creative mindset, the will to explore new approaches

Contact

Sira Bielefeldt & Florin Püntener
sbielefeldt@ethz.ch | florinp@ethz.ch

Micro- and Nanosystems, CLA G5