

Improved Transfer of Flexible Tactile Sensing Arrays onto Artificial Robotic Fingers

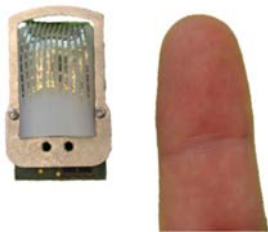
Master Thesis

Keywords

Artificial robotic finger, image processing, pattern recognition, machine learning, python programming, CAD design, fabrication

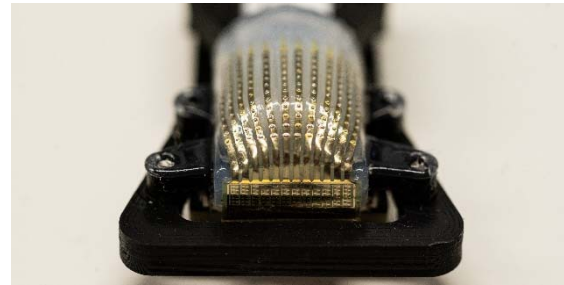
Motivation

The overall goal of this project is the development of an artificial robotic skin which integrates tactile sensing capabilities into an artificial finger. For a more accurate and reproducible fabrication, the placement of the tactile arrays onto the silicone finger must be characterized and improved to reduce finger to finger variation.



Project

The goal of this master thesis is to develop a method to determine the individual locations of more than 100 tactile sensors (taxels) of an array placed on a curved artificial silicone robotic finger. The smallest tactile sensing unit (taxel) is around 0.5 mm in diameter. We aim to use an image-based approach and/or machine learning to find the corresponding locations of the taxels. Furthermore, you will develop and characterize new transfer methods to improve the positioning accuracy of the taxels.



Tasks and Learning Opportunities

- Mechanical design and prototyping of hardware with the help of CAD/3D Printer/Laser cutter
- Implementation of image-based taxel localization algorithm
- Testing and evaluating the performance of the developed setup

Your Profile

- Pre-existing CAD/design know-how is mandatory
- Basics in machine learning and/or image processing advantageous
- Motivated to work on an interdisciplinary topic
- Structured and independent working style, innovative and creative mindset, the will to explore new approaches

Contact

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