

16-848 Reference List for April 4, 2022

Today, we primarily looked at three different papers showcasing three different technologies for soft sensors. The first described a technique for printing by injecting traces of conductive ink into silicone gel during the curing process, creating a resistive soft sensor.

Ibarra, Alejandro, Baptiste Darbois-Textier, and Francisco Melo. "Designing a Contact Fingertip Sensor Made Using a Soft 3D Printing Technique." *Soft Robotics* (2022).
<https://www.liebertpub.com/doi/pdfplus/10.1089/soro.2021.0128>

This process of Embedded 3-Dimensional Printing (EMB3D printing) is summarized in the following article:

Grosskopf, Abigail K., Ryan L. Truby, Hyungsoo Kim, Antonio Perazzo, Jennifer A. Lewis, and Howard A. Stone. "Viscoplastic matrix materials for embedded 3D printing." *ACS applied materials & interfaces* 10, no. 27 (2018): 23353-23361.
<https://pubs.acs.org/doi/pdf/10.1021/acsami.7b19818>

This Harvard octopus was printed using this technique:

<https://www.3dprintingmedia.network/harvard-researchers-emb3d-print-first-autonomous-entirely-soft-robot/>

The second sensor we discuss was the magnetic ReSkin sensor, focusing on this paper:

Bhirangi, Raunaq, Tess Hellebrekers, Carmel Majidi, and Abhinav Gupta. "ReSkin: versatile, replaceable, lasting tactile skins." *arXiv preprint arXiv:2111.00071* (2021).
<https://arxiv.org/pdf/2111.00071.pdf>

You can find their web page and blog at the following links: <https://reskin.dev/>
<https://ai.facebook.com/blog/reskin-a-versatile-replaceable-low-cost-skin-for-ai-research-on-tactile-perception>

The USkin page is here: <https://xelarobotics.com/en/uskin-sensor>

Third, we had a quick look at the following paper, which describes a capacitive sensing glove for recovering hand pose through measuring stretch.

Glauser, Oliver, Shihao Wu, Daniele Panozzo, Otmar Hilliges, and Olga Sorkine-Hornung. "Interactive hand pose estimation using a stretch-sensing soft glove." *ACM Transactions on Graphics (TOG)* 38, no. 4 (2019): 1-15.
<https://igl.ethz.ch/projects/stretch-glove/>
https://igl.ethz.ch/projects/stretch-glove/Stretch-Sensing-Glove-2019_video.mp4