

# Elastomeric sensors for 3D shape sensing

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Figure 1: Fitting prosthetics [1]



Figure 2: Artificial skin [2]

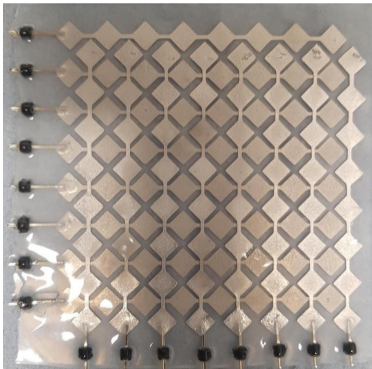


Figure 3: ADMIRE's soft sensor prototype

### Sensor properties:

- Soft silicon sheet
- With embedded capacitances
- Contains  $8 \times 8$  cells
- Data transfer via USB

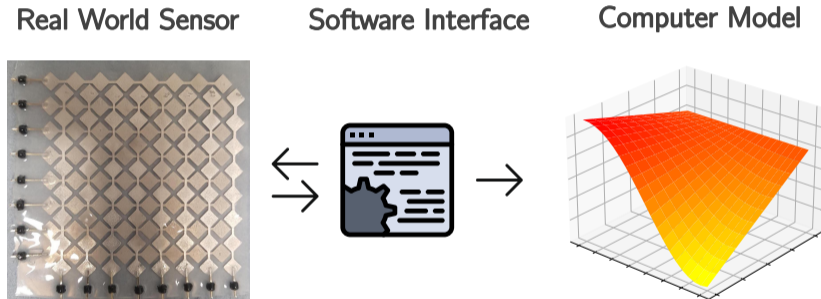
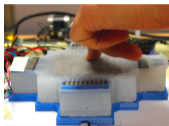


Figure 4: The software interface generates a 3D model based on the sensor data.  
Icon source: [3]



(a) Soft sensor with pressure sensor



(b) Computer model

Figure 5: Visualizing deformation [4]

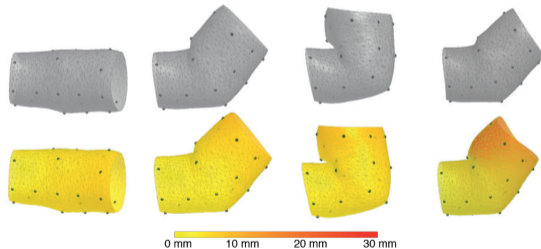
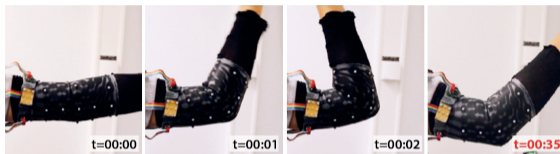


Figure 6: Four frames of a capture session [5]

### 1. Software Interface

- Simple API between hardware and software
- High-performance

### 2. Data Preprocessing

- Handle outliers
- Apply filters/transformations
- Data enrichment

### 3. Modeling Methods

- Finite element method
- Neural networks
- A mix of methods

### 4. Model Evaluation

- Model complexity
- Time for computation
- Error of deviation

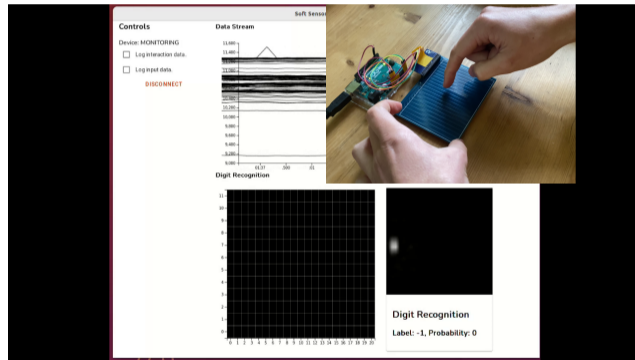


Figure 7: Monitoring application

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- Anita Kloss-Brandstätter
- Gregor Fritz

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