



**UNSW**  
SYDNEY



## Tactile Sensing for Biomedical Technologies

**Restoring missing sensory function following hand amputation is a challenge for prosthetic designers/engineers. This patented technology replicates the human sense of touch and could provide upper limb prosthetics of the future with a sense of friction and grip security, which is essential for dexterity.**

### Competitive advantage

- Patented soft sensor design can measure 3D localised force, 3D localised deflection, 3D localised vibration, torque, incipient slip (when parts of a surface slip while other parts remain stuck) and friction at the contact interface
- No other sensing technology can measure all of these parameters which are sensed by the human skin and play an essential role in enabling human dexterity
- Sensor technology could provide upper limb prosthetics of the future with a sense of touch
- The size, density, compliance, measurement range and sensitivity of the sensor can be customised
- The sensor is resistant to heat, shock, water and chemicals

### Impact

- Applications of the tactile sensing technology include hand prostheses, robotic surgery, robot-assisted rehabilitation – which improve control and dexterity through feedback mechanisms based on tactile information.

### Successful outcomes

- Successful participation in the CSIRO ON Accelerate 2019 start-up accelerator program for commercialisation.

### Capabilities and facilities

- Electrical engineering (electronics design and signal processing)
- Software engineering (firmware and software design and programming)
- Machine learning
- Prototyping
- 3D printing
- Electronics
- Testing equipment including robotic arms and grippers and mechanical stages

### Our partners

- Funding from US Office of Naval Research Global.

### More Information

Dr Heba Khamis

Graduate School of Biomedical  
Engineering

T: +61 (0) 450 505 582

E: [h.khamis@unsw.edu.au](mailto:h.khamis@unsw.edu.au)

UNSW Knowledge Exchange

[knowledge.exchange@unsw.edu.au](mailto:knowledge.exchange@unsw.edu.au)

[www.capabilities.unsw.edu.au](http://www.capabilities.unsw.edu.au)

+61 (2) 9385 5008

