



# Dual Mode Tactile and Proximity Sensor

**IP Status:** Issued US Patent; **Application #:** 11/655,356

## Dual mode capacitance sensor

A new tactile sensor system measures not only contact force (tactile information) but also the approach of an object before it touches the sensor (proximity information). The sensor consists of two layers of an electrode array crossed to make a capacitor cell. Dielectric materials sandwiched between the two electrode layers form a capacitor array at the crossing points. The dielectric material between the electrodes deforms due to contact force, inducing a capacitance change between the upper and lower electrodes. Scanning this capacitance change captures contact force distribution, and by using the fringe capacitance in the upper electrodes, the sensor can sense the approach of an object (proximity) before it touches the sensor.

## Technology ID

z07113

## Category

Engineering & Physical  
Sciences/Instrumentation,  
Sensors & Controls  
Engineering & Physical  
Sciences/Robotics

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Both tactile and proximity sensing in a single platform

Existing sensors can either operate as a tactile sensor by detecting the contact pressure or as a proximity sensor to detect an approaching object. Tactile and proximity sensors are needed in systems such as robots. When two individual sensors are used on a robot, a large area and volume is required. This technology is the first ever to implement a tactile sensor with proximity sensing capability in a single platform.

## Phase of Development

- Proof of concept. Prototype built and tested.

## Benefits

- Eliminates the need for two separate sensors
- Simpler to implement. Less space and volume required

## Features

- Tactile sensor with proximity sensing capability
- Single platform
- Capacitance sensor

### **Applications**

- Artificial tactile skin for robots
- Robots
- Machine interface
- Interface for mobile devices
- Tactile sensor
- Proximity sensor

#### **Interested in Licensing?**

The University relies on industry partners to further develop and ultimately commercialize this technology. The license is for the sale, manufacture or use of products claimed by the patents. Please contact us to share your business needs and licensing and technical interests in this technology.

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