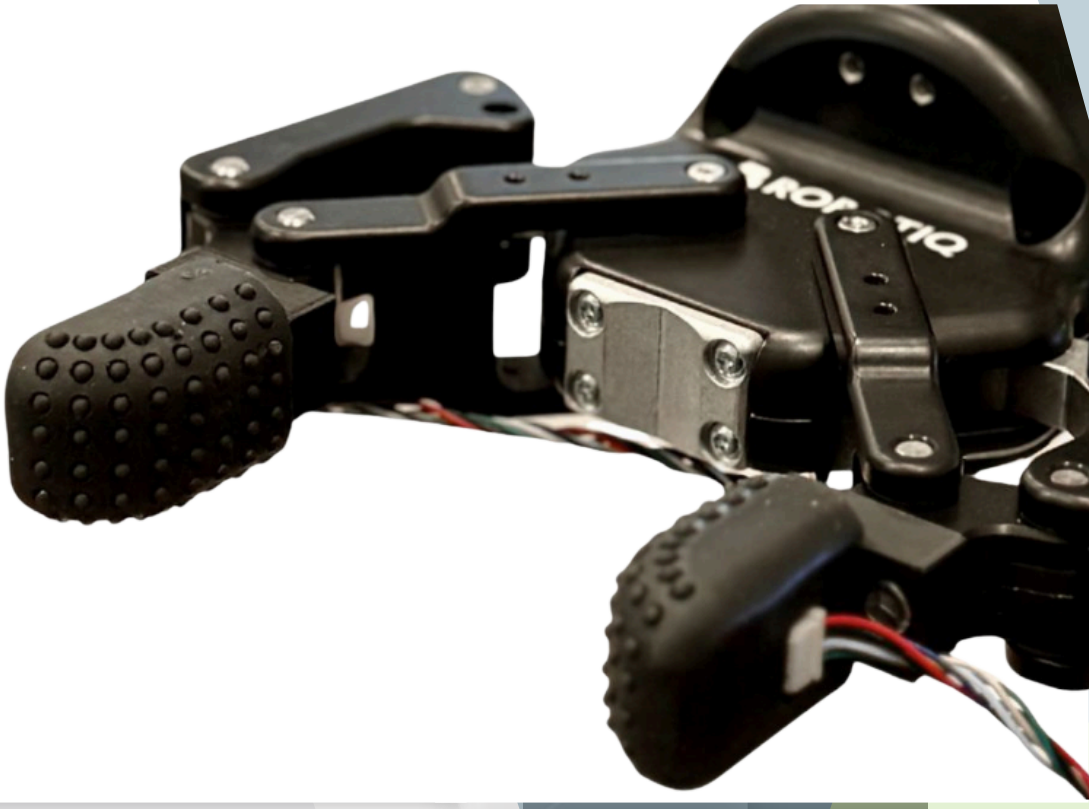


RoboTact

Empowering robots with human-life dexterity for real-world interactions

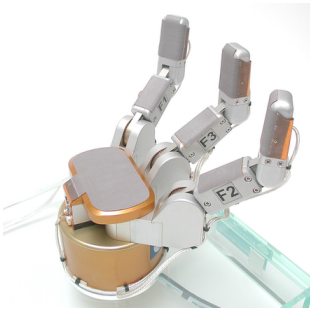
Our Technology in Robotics

LEGACY OF INNOVATION IN ROBOTICS

Founded by Dr. Jae Son in 1997, PPS has been pushing the boundaries of tactile sensing technology for over two decades. With a PhD from Harvard, Dr. Son's early research at the Harvard Robotics Laboratory involved collaborations with MIT and Yale to develop tactile sensors that mimic the human sense of touch.

His vision was to bring these innovations into practical applications, leading to the creation of PPS. With experience from Hughes Space, GM, and the Howard Hughes Medical Institute, Dr. Son pursued tactile sensors to revolutionize robotics and medical technology.

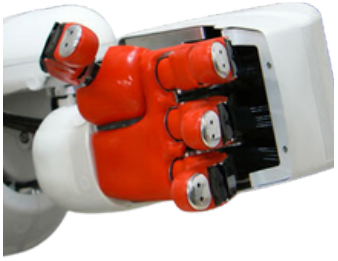
ROBOTOUCH: BRINGING ROBOTS THE SENSE OF TOUCH



RoboTouch technology equips robots with the ability to "feel" through capacitive tactile sensing, allowing them to detect and measure physical contact with high precision. By integrating these sensors, robotic grippers gain the ability to perform delicate tasks requiring fine tactile feedback, significantly improving robotic dexterity and control.

TWENDY-ONE: ADVANCED TACTILE FEEDBACK FOR COMPLEX TASKS

Twendy-One robot, equipped with our tactile sensors, showcases enhanced interaction capabilities through 241 sensing elements in each hand. These sensors allow it to perform complex, safe human-robot interactions, such as in-hand manipulation and object recognition, by leveraging precise tactile feedback.





WILLOW GARAGE PR2: MIMICKING HUMAN SENSORY CHANNELS

In the Willow Garage PR2, our tactile sensors enable real-time data processing for object handling. Embedded in the gripper's fingertips, the sensors allow the robot to dynamically adjust its grasping force, preventing slippage and ensuring safe and precise manipulation of various objects, mimicking human touch and dexterity.

Introduction

INTRODUCTION AND PRODUCT OVERVIEW

RoboTact Sensors are transforming how robots interact with the world, giving them the ability to feel as they grip and manipulate objects. Embedded directly within robotic fingers or grippers, these sensors capture detailed data on contact, force, and even early signs of slipping, allowing machines to handle items with remarkable precision.

Built for both flat and curved surfaces, RoboTact's flexible design delivers accuracy and durability across a full-scale range of up to 20 PSI. Each unit includes an integrated accelerometer to record vibration data, enhancing feedback during manipulation.



Supporting up to 4 finger sensors per system, along with dedicated electronics and software, RoboTact offers easy integration for research, manufacturing, and humanoid robotics.

With customizable sizes and pressure ranges, these sensors bring a new level of dexterity and tactile intelligence to robotic systems worldwide.





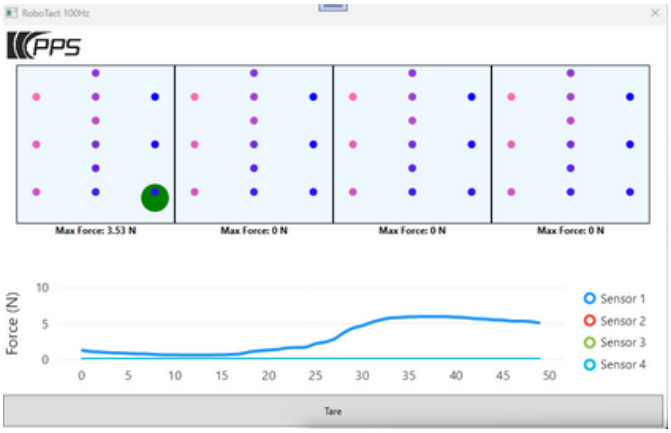


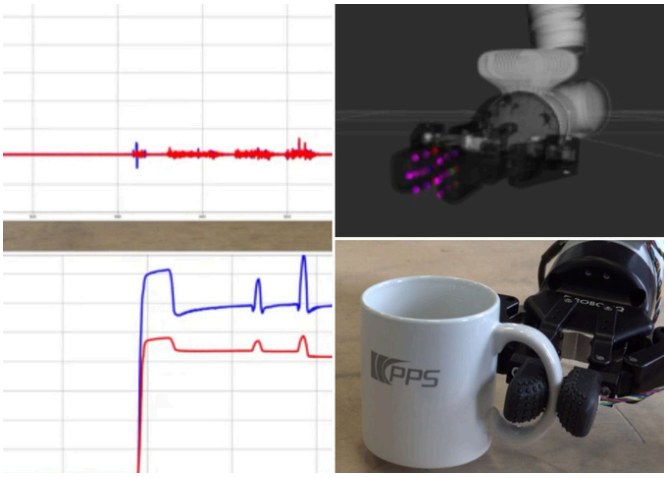
Tesollo DG-5f griper equipped with three RoboTact sensors as presented at the RobotWorld 2025 in Kintex, Korea.

KEY BENEFITS

+ Customized for finger tip shapes
+ High sensitivity and repeatability
+ Durable for long-term use
+ Provides processed data for dextrous manipulation

Features & Applications





CONNECTIVITY & SOFTWARE

We offer both **USB** and **Bluetooth** connectivity options to ensure versatile communication capabilities.

Additionally, we provide a **ROS2** driver, enabling seamless integration with leading robotics and automation platforms.

This combination of robust connectivity and compatibility with ROS2 ensures that our system is flexible, user-friendly, and highly scalable, making it ideal for advanced robotics, IoT, and edge computing environments.

APPLICATIONS

RoboTact is engineered to seamlessly adapt to simple gripper curvatures, providing reliable tactile feedback across various surfaces.

Its flexible, durable design makes it ideal for integration into robotic fingers, flat gripper components, or other straightforward geometries, ensuring optimal pressure and force measurement.

Depending on the required application, the RoboTact sensor can be equipped with either a smooth surface finish to collect data on pressure force, and the precise location of these within the 12-element array, or with an additional soft silicone pad, resembling a human finger pad.

This enhanced design captures not only pressure and force but also critical tactile parameters such as vibration, incipient slip, and friction, all essential for achieving robotic dexterity.

EXAMPLE APPLICATIONS:

+ Enhancing precision and control in robotic arms
+ Mimicking human-like touch and dexterity for service robots
+ Soft robotics manipulation research
+ Improving grip control and object handling in logistics
+ Tactile sensing for developing advanced robotic prototypes

Technical Specifications

SYSTEM COMPONENTS

1. Hub board with either **USB 2.0** or **Bluetooth Interface**
2. Up to 4 RoboTact sensors (with skin)

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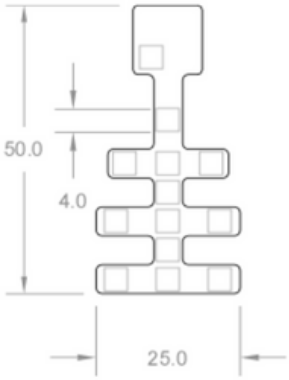


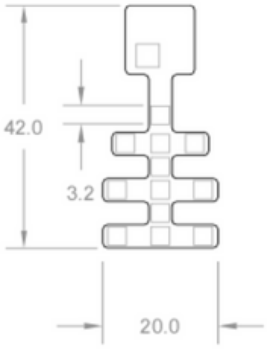
2

Up to 4



SENSOR MODEL EXAMPLES





RoboTact are available in two different sizes with individual sensor elements sized at 3.2×3.2 mm or 4×4 mm, offering precision measurement across varying active areas.

Each sensor contains a 12-element array, providing detailed tactile data including pressure, force, and vibration. Custom configurations are available to fit specific gripper shapes and requirements.

Sensor Characteristics & Performance*

Full-Scale Range	45 PSI (Pressure) ±2g (acceleration)
Minimum Detection Level	0.015 PSI / 0.001g
Signal to Noise Ratio	> 700:1
Scan Rate	100 Hz

*Performance numbers are for typical system response.

Interconnections	Board to board connection to PPS Hub Board electronic via (SM06B-SHLS-TF)
Number of Elements	12
Sensor Element Size	3.2 × 3.2 mm or 4 × 4 mm
Digital Interface	I2C (400 kHz)

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