

# Tachin Technology – Flexible Tactile Data Acquisition Glove TachinGlove

## 1 Product Description

The TachinGlove Flexible Tactile Data Acquisition Glove is an intelligent wearable device designed for full-hand tactile signal acquisition and data recording. The product integrates a high-density array of ultra-thin flexible electronic skin sensing units capable of capturing multimodal tactile signals such as normal force and shear force. It records the distribution and characteristics of contact forces across fingers, palm, and other regions during operations such as grasping, pressing, and sliding.

The glove adopts a biomimetic high-density array layout covering major tactile interaction areas including all five fingers and the palm. Its flexible structure adapts naturally to hand bending, gripping, and routine movements, enabling data acquisition during natural operation and reproducing real human working conditions.

The product features a low-noise design in free-grasp conditions, effectively reducing false trigger signals and invalid data interference in non-contact states, thereby improving data stability, usability, and overall data purity.

The glove supports Wi-Fi wireless communication and battery-powered operation, completely eliminating cable constraints and enabling flexible data acquisition anytime and anywhere. It is suitable for mobile acquisition and multi-scenario deployment. The product can be applied in embodied intelligence training, robotic teleoperation, rehabilitation assessment, industrial operation data collection, and related scenarios, providing high-precision and high-reliability full-hand tactile signal acquisition and data recording solutions.

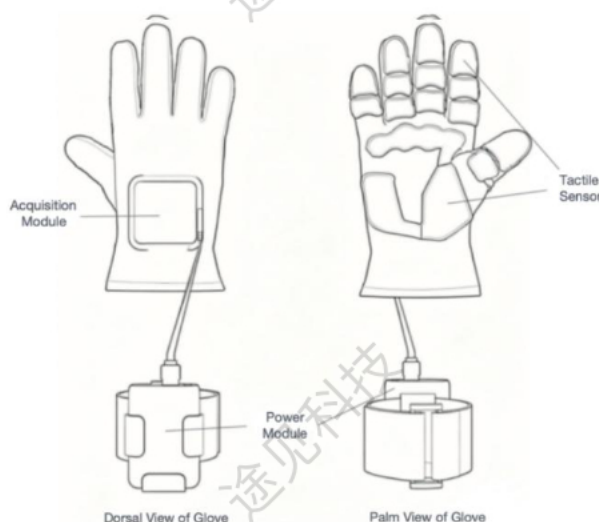
## 2 Product Features

- Multidimensional tactile sensing: Normal force and shear force
- High force resolution: 0.05 N/cm<sup>2</sup>
- High-density sensor array: 815 sensing points

- Large coverage area: Full coverage of five fingers and palm with biomimetic palm-print distribution
- Wide force measurement range: Up to 30 N/cm<sup>2</sup>
- High spatial resolution: < 2 mm
- Low-noise acquisition: No data generated during free grasping, reducing invalid data
- High flexibility: Wi-Fi connectivity without cable restrictions

### 3 Application Scenarios

The TachinGlove Flexible Tactile Data Acquisition Glove can be used in embodied intelligence training, robotic teleoperation, rehabilitation assessment, industrial operation data collection, and other application scenarios. It supports tactile signal acquisition during human hand operations, motion teaching, contact force distribution recording, and multimodal dataset construction.



### 4 Product Structure

| Component  | Description                                                                                                                             |
|------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Glove Palm | The palm and five fingers contain 815 pressure sensors arranged in a biomimetic palm-print array layout for collecting contact pressure |

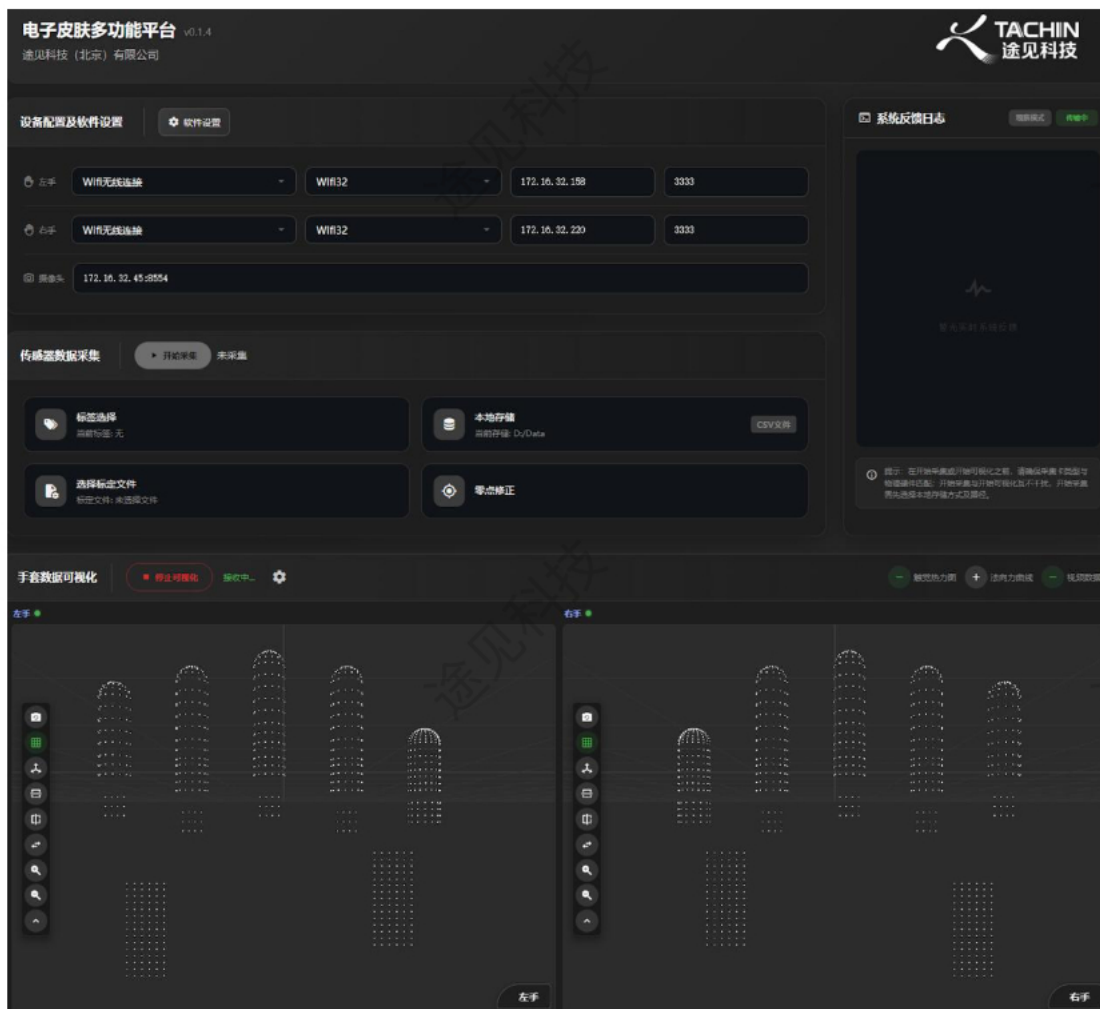
|              |                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|              | <p>distribution data during grasping, pressing, sliding, and other operations. The system supports low-noise acquisition during free-grasp conditions, reducing false trigger signals and invalid data interference in non-contact states, thereby improving data stability, usability, and purity.</p>                                                                                              |
| Glove Back   | <p>Integrated high-precision data acquisition module for sensor signal collection, processing, and transmission, supporting high-frequency data acquisition requirements. Integrated WiFi communication module supports wireless data transmission, reducing cable limitations on hand operation and acquisition space, making it suitable for mobile acquisition and multi-scenario deployment.</p> |
| Power Module | <p>Equipped with a high-capacity replaceable battery supporting continuous sampling time of more than 10 hours.</p>                                                                                                                                                                                                                                                                                  |

## 5 Product Specifications

| Parameter Category  | Parameter Item                 |                             | Typical Value              |
|---------------------|--------------------------------|-----------------------------|----------------------------|
| Appearance & Weight | Glove Size (L×W)               |                             | 210×150 mm                 |
|                     | Glove Thickness (Single Layer) |                             | 1.4±0.2 mm                 |
|                     | Battery Size                   |                             | 76.5×53.2×15 mm            |
|                     | Glove Net Weight               |                             | 75 g                       |
|                     | Battery Net Weight             |                             | 90 g                       |
| Tactile Sensor      | Sensor Size                    | Sensor Thickness            | 1.0±0.1 mm                 |
|                     |                                | Sensing Dimensions          | Normal Force + Shear Force |
|                     |                                | Single Sensor Size          | 1.5×1.5 mm                 |
|                     |                                | Number of Sensors           | 815                        |
|                     |                                | Single-point Press Lifespan | 300,000 cycles             |
|                     | Normal Force                   | Measurement Range           | 0.2-30 N/cm <sup>2</sup>   |

|                            |                        |                              |                                  |
|----------------------------|------------------------|------------------------------|----------------------------------|
|                            |                        | Average Measurement Accuracy | < 20% FS                         |
|                            |                        | Measurement Resolution       | 0.05 N/cm <sup>2</sup>           |
|                            |                        | Spatial Resolution           | < 2 mm                           |
|                            |                        | Electrode Blind Area         | 0.5 mm                           |
|                            | Stability & Uniformity | Point Consistency            | < 20%                            |
|                            |                        | Constant Pressure Drift      | < 10% FS                         |
|                            | Wireless Polling Rate  |                              | 50 Hz                            |
|                            | Wired Polling Rate     |                              | 100 Hz                           |
| Electrical & Communication | Power Supply           |                              | Battery or USB Type-C, 5 V / 1 A |
|                            | Power Consumption      |                              | 1 W                              |
|                            | Telecommunication      |                              | WiFi or USB Type-C               |
| Environmental Requirements | Operating Temperature  |                              | -5-45 °C                         |
|                            | Storage Temperature    |                              | -10-45 °C                        |
|                            | Operating Humidity     |                              | < 55% RH                         |
|                            | Storage Humidity       |                              | < 55% RH                         |

## 6 PC Software User Guide



The flexible tactile data acquisition glove supports two communication modes: Wi-Fi wireless connection and USB Type-C wired connection, which can be selected according to acquisition needs to flexibly adapt to different usage scenarios. The wireless mode is free from cable constraints and meets mobile acquisition needs; the wired mode provides a higher sampling rate, suitable for high-precision, long-time acquisition scenarios. Both connection modes support communication with the upper computer software to realize tactile data collection, display, storage, export, and other processing procedures.

The upper computer software is used for data reception, real-time display, storage, playback, export, and calibration management of the flexible tactile data acquisition glove. Its main functions include:

- Real-time visual display
  - Supports real-time display of tactile data such as 3D force, tangential force, and pressure distribution, showing data change trends and spatial distribution characteristics through dynamic waveform charts, heat maps, etc.
- Data management
  - Supports real-time storage of collected data, historical data playback, and data export, compatible with mainstream data formats, facilitating subsequent analysis and secondary processing by users.
- Zero correction
  - Supports sensor zero drift correction to reduce the impact of initial offset, environmental changes, or baseline drift caused by long-term use on collected data, ensuring the accuracy of data acquisition.
- Sensor calibration
  - Built-in standardized calibration process, users can complete sensor accuracy calibration with simple operations, compensate for performance fluctuations caused by manufacturing tolerances and aging, and improve the consistency of long-term measurement and data reliability.
- Operating Environment & Usage Instructions
  - Operating platform: The upper computer GUI software only supports Windows operating system. Please confirm that the computer operating system meets the software version requirements before use.
  - Detailed operations: GUI interface operation procedures, API interface calling methods, parameter configuration, graphic tutorials, and troubleshooting are detailed in the User Manual.

## 7 Precautions

- Equipment Protection
  - The device is a precision electronic device; avoid collision, dropping, and extrusion.
  - Avoid contact with water, oil, and corrosive liquids to prevent equipment damage or sensor failure.
  - Avoid using in high-temperature, low-temperature, high-humidity, and dusty environments.
- Glove Usage
  - Avoid pulling the glove hard when wearing it.
  - Avoid sharp objects scratching the glove surface to prevent sensor detachment

or damage.

- Do not wear it for too long (rest for 10 minutes every 1-2 hours is recommended) to avoid compressing hands and affecting blood circulation.
- Data Collection
  - Ensure sufficient light and a simple background in the acquisition area.
  - Avoid strong light directly shining on the camera lens and hand occlusion.
  - Otherwise, it will affect motion capture accuracy and tactile data collection effect.
- Charging & Maintenance
  - Use the matching charging cable; avoid non-original charging equipment.
  - Avoid touching the device during charging to prevent short circuit or overheating.
  - Charge the lithium battery regularly (at least once a month is recommended) to avoid battery damage caused by long-term power loss.
- Software & Maintenance
  - Update the PC software regularly to ensure compatibility with the device.
  - Do not disassemble or repair the device by yourself when it fails; contact after-sales service personnel.
  - Turn off the device power in time after data collection and organize the equipment components.
  - Store in a dry and ventilated environment.

## Contact Us

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