

Poster Session at Graduate School Information Fair

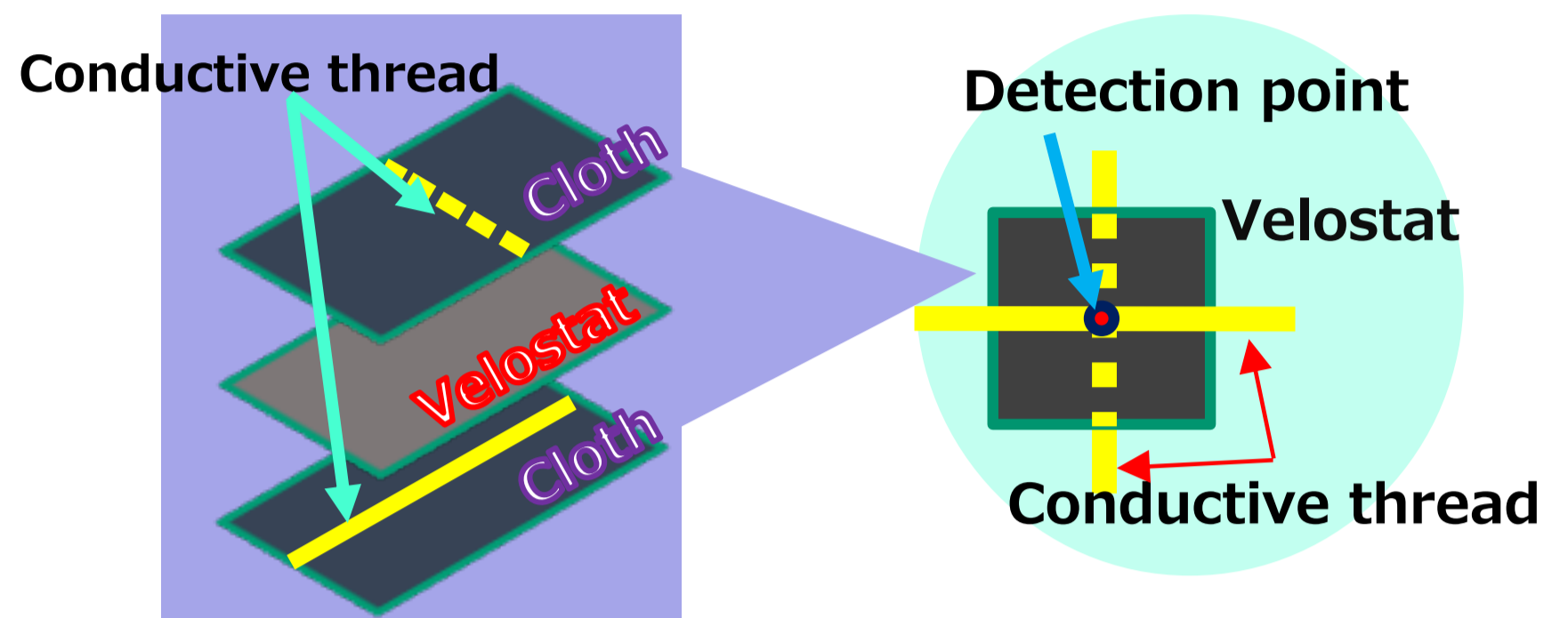
An E-Textile-Integrated Glove for Visualizing Pressure

E-Textile-Integrated Glove

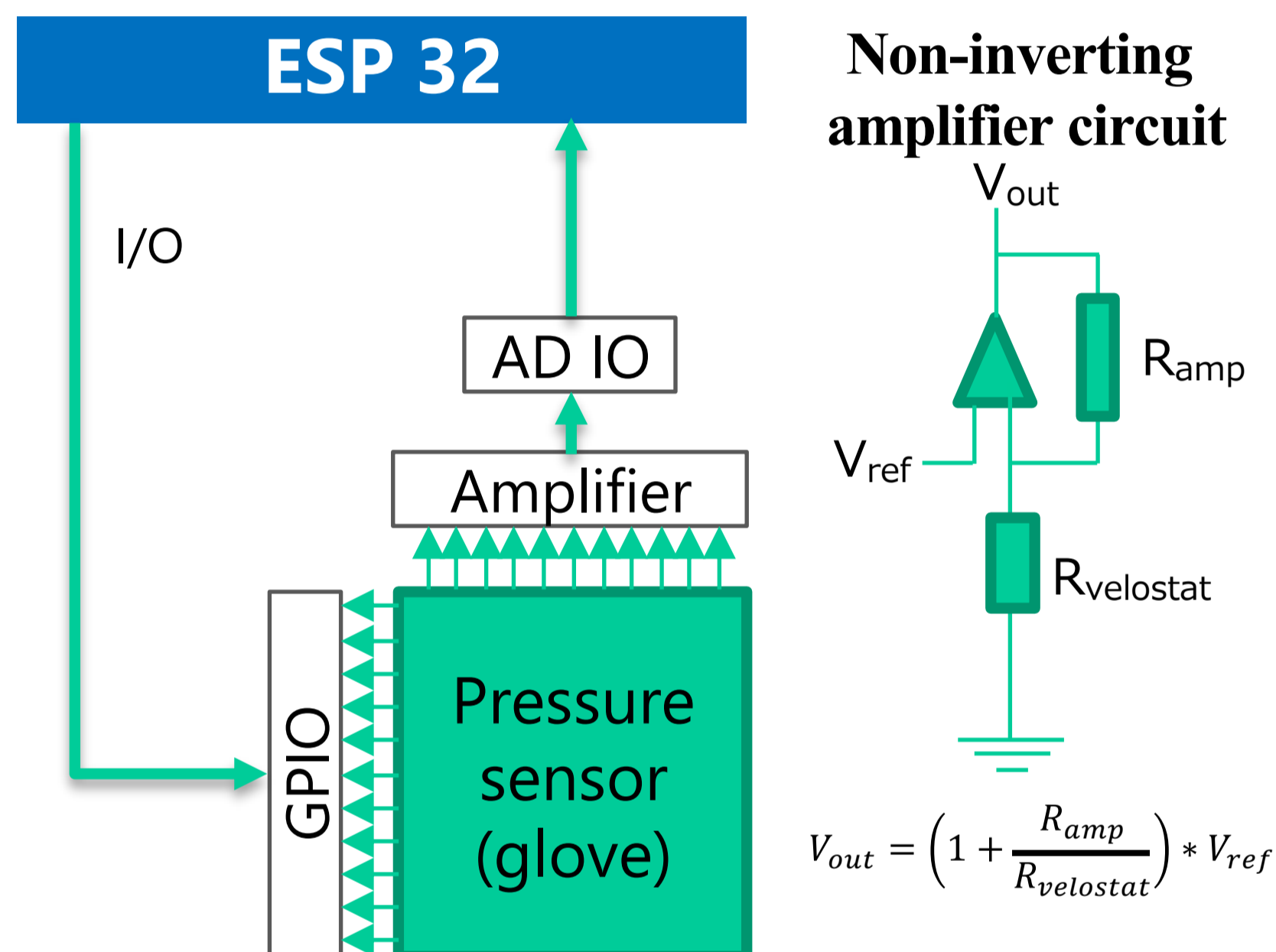
Research Objective

The research objective is to develop a glove with E-textile specifications, utilizing conductive threads and sewing techniques, to visualize various forces in response to human hand movements.

Pressure Detection with the Created Simple Sensor



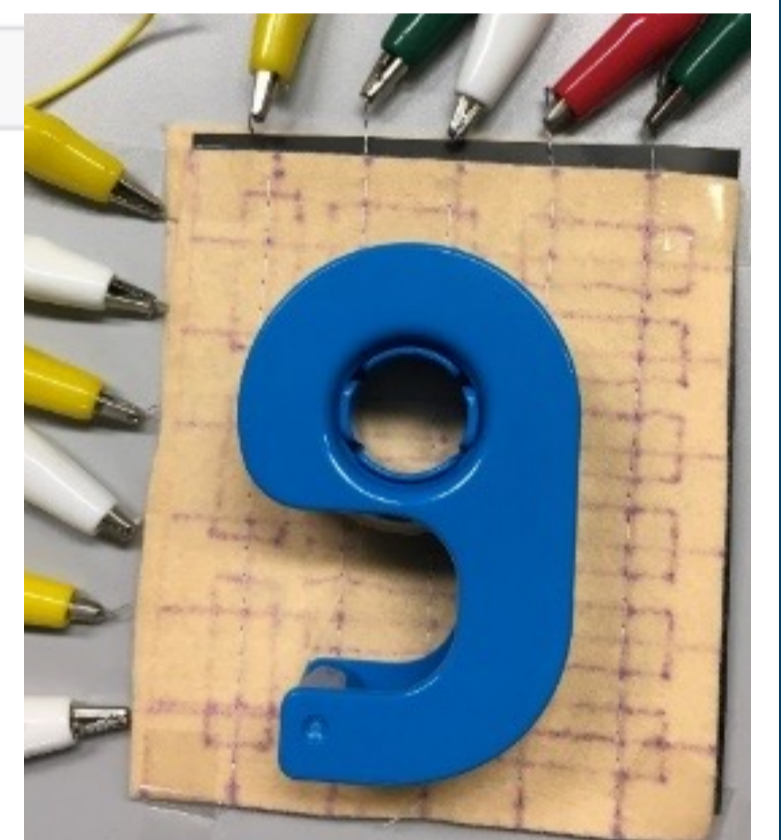
Sensor and Peripheral Circuitry



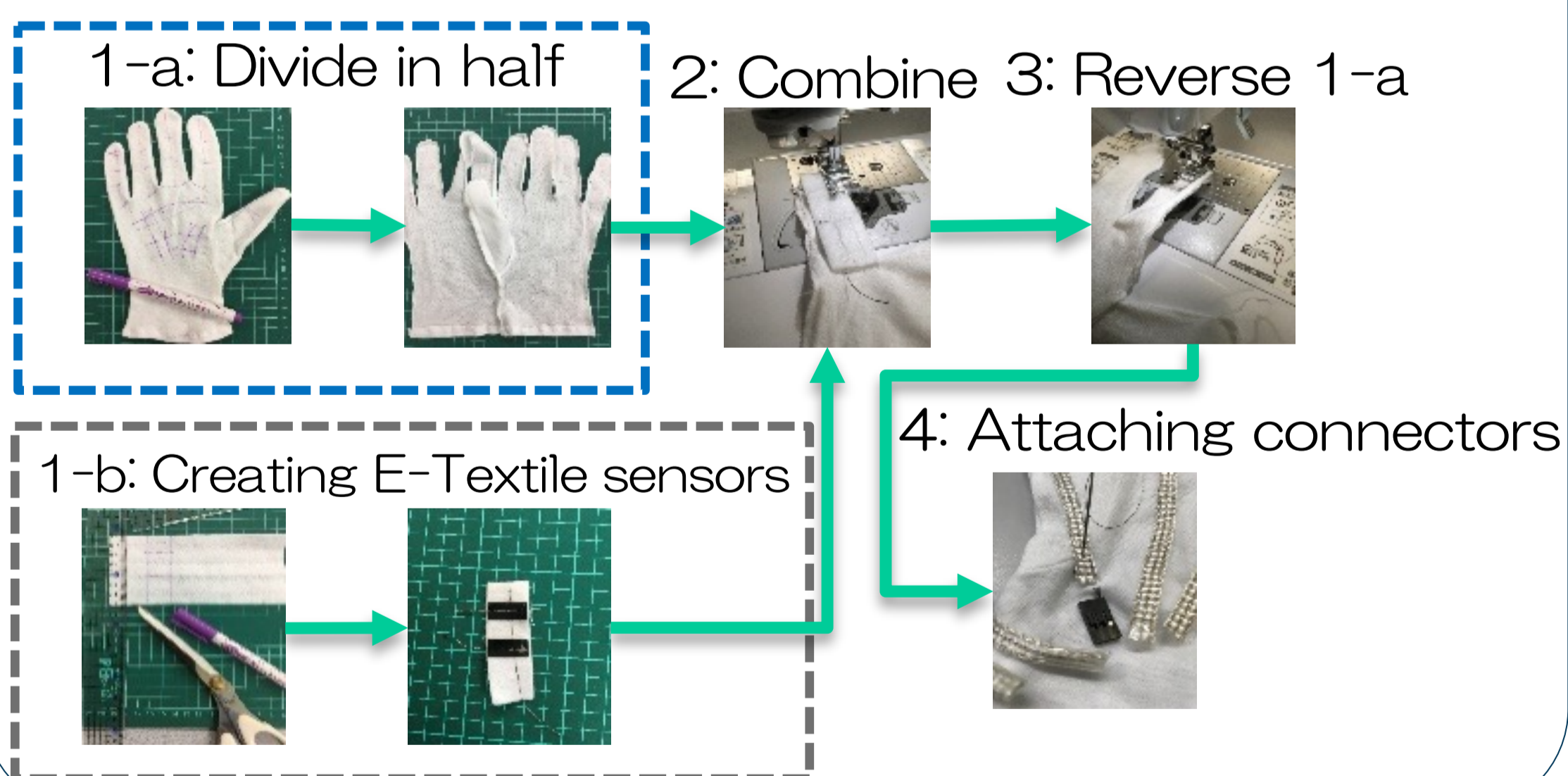
E-Textile Sensor

In [*]: pressure_sensor()

	little	ring	middle	index	thumb
1	0.41	0.59	0.61	0.59	0.56
2	0.58	0.93	0.92	0.78	0.52
3	0.59	0.94	0.69	0.92	0.52
4	0.53	0.73	0.84	1	0.51
5	0.52	0.59	0.6	0.81	0.51
6	0.56	0.97	0.97	0.71	0.52



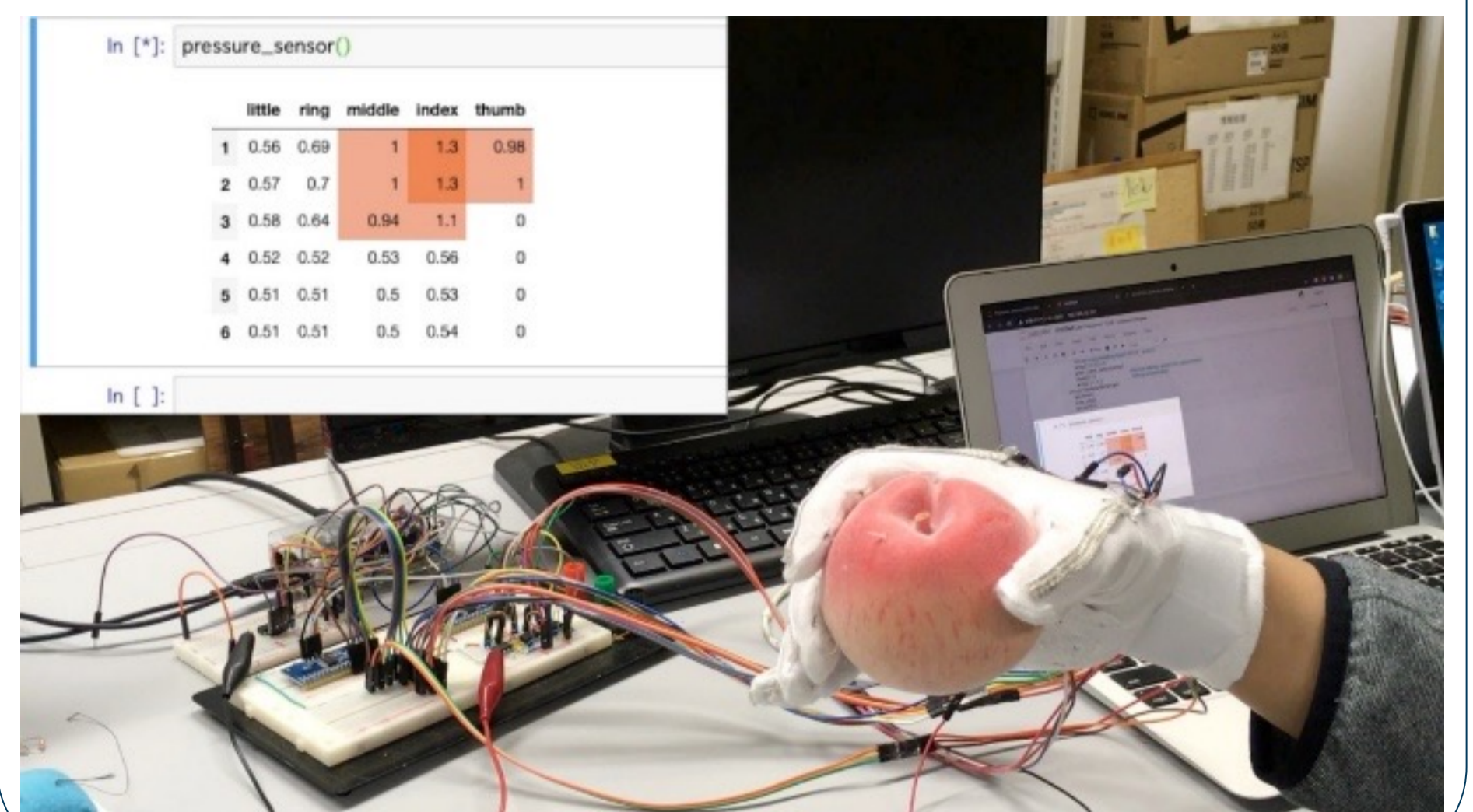
Glove Manufacturing Workflow



Visualization with a Data Glove

In [*]: pressure_sensor()

	little	ring	middle	index	thumb
1	0.56	0.69	1	1.3	0.98
2	0.57	0.7	1	1.3	1
3	0.58	0.64	0.94	1.1	0
4	0.52	0.52	0.53	0.56	0
5	0.51	0.51	0.5	0.53	0
6	0.51	0.51	0.5	0.54	0



Conclusion and Outlook

Conclusion

E-Textile technology is versatile and can be integrated into a wide range of fabric-based products, offering applications in various scenarios such as visualizing walking patterns and seating positions.

Outlook – Thread-like Sensor

Thread-like sensors are fabricated by encapsulating fine conductive threads with Polydimethylsiloxane(PDMS). PDMS deformation allows the sensors to detect changes in pressure. Additionally due to the properties of PDMS, the resulting sensors are flexible, highly sensitive, and durable.

