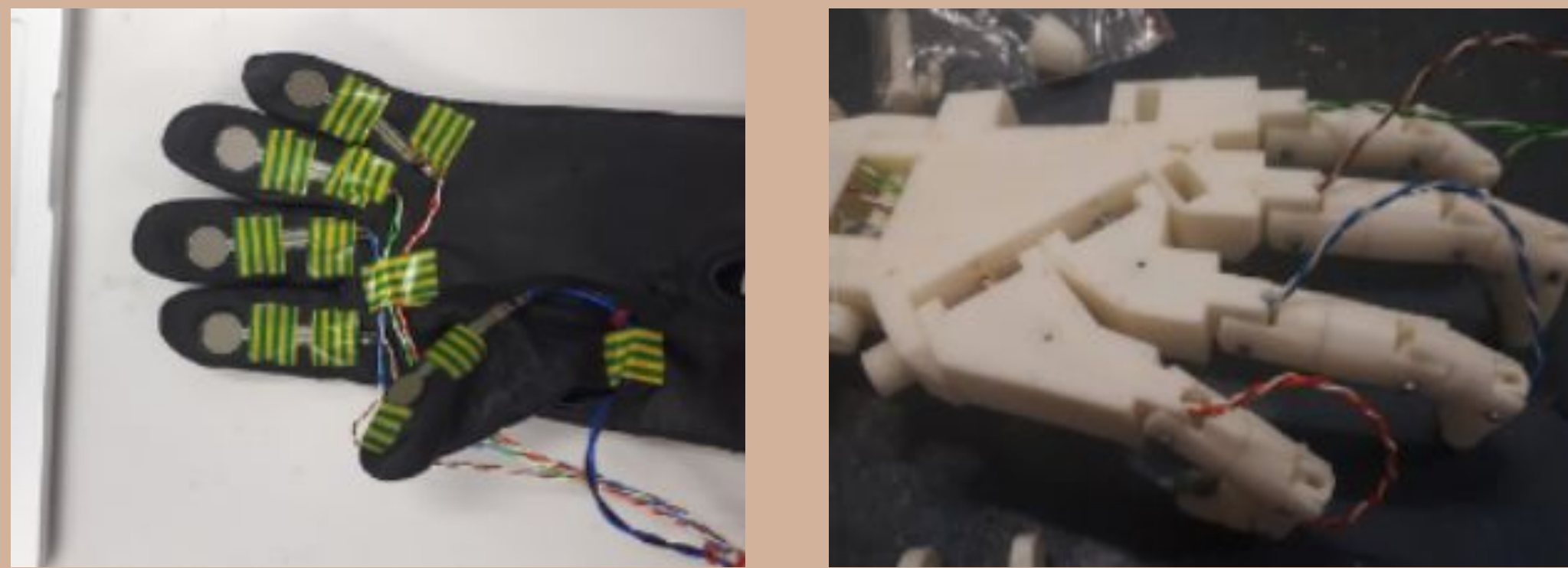


Key Concept: Tactile Sensors

A device classification for objects that measures information arising from physical interaction with its environment

Resistive



Figs 1, 2: User Glove (Left) and Robotic Hand (Right) equipped with Resistive sensors (Ross)

- Cheap
- Highly Durable
- Low Power

- Converts physical attributes to electricity
- Self powers to transmit sensations
- Texture, vibrations, pressure
- Struggles with slow or extreme environments

Piezoelectric

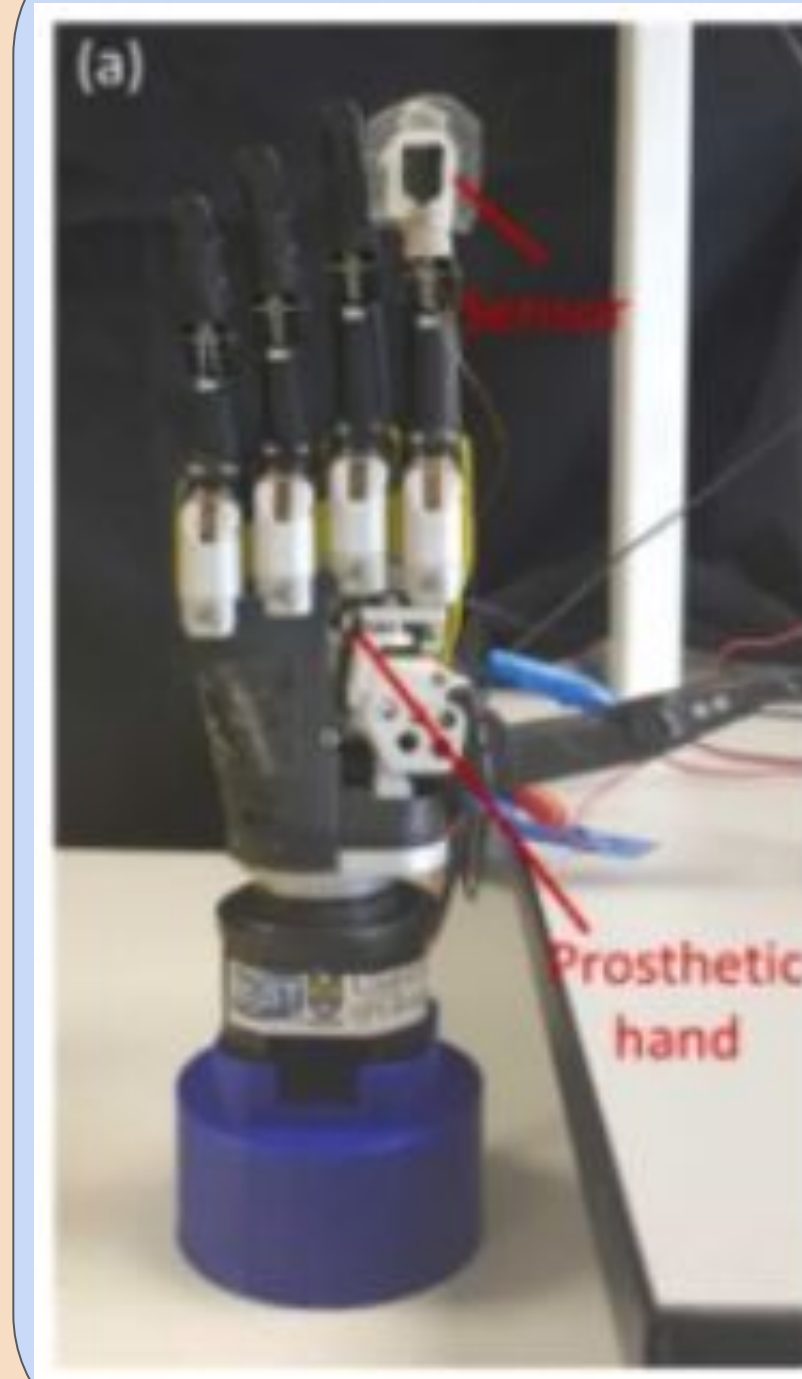


Fig 3: i-Limb prosthetic hand equipped with a piezoelectric sensor (Additive)

Lending a Hand: Giving Prosthetics the Ability to Feel



Fig 6: ETRI's omnidirectional tactile sensors (ETRI)

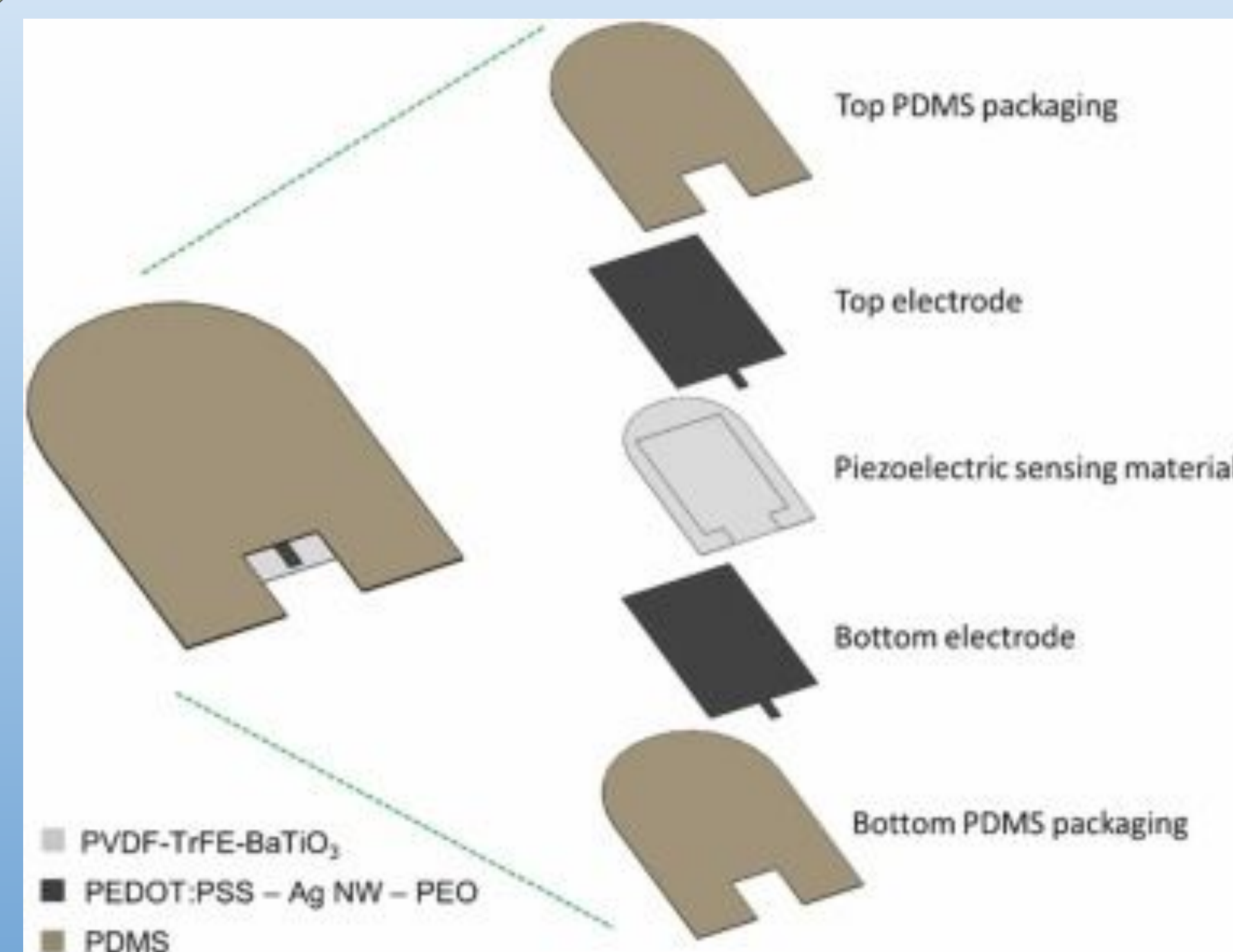


Fig 4: Exploded Piezoelectric Sensor (Additive)

Capacitive

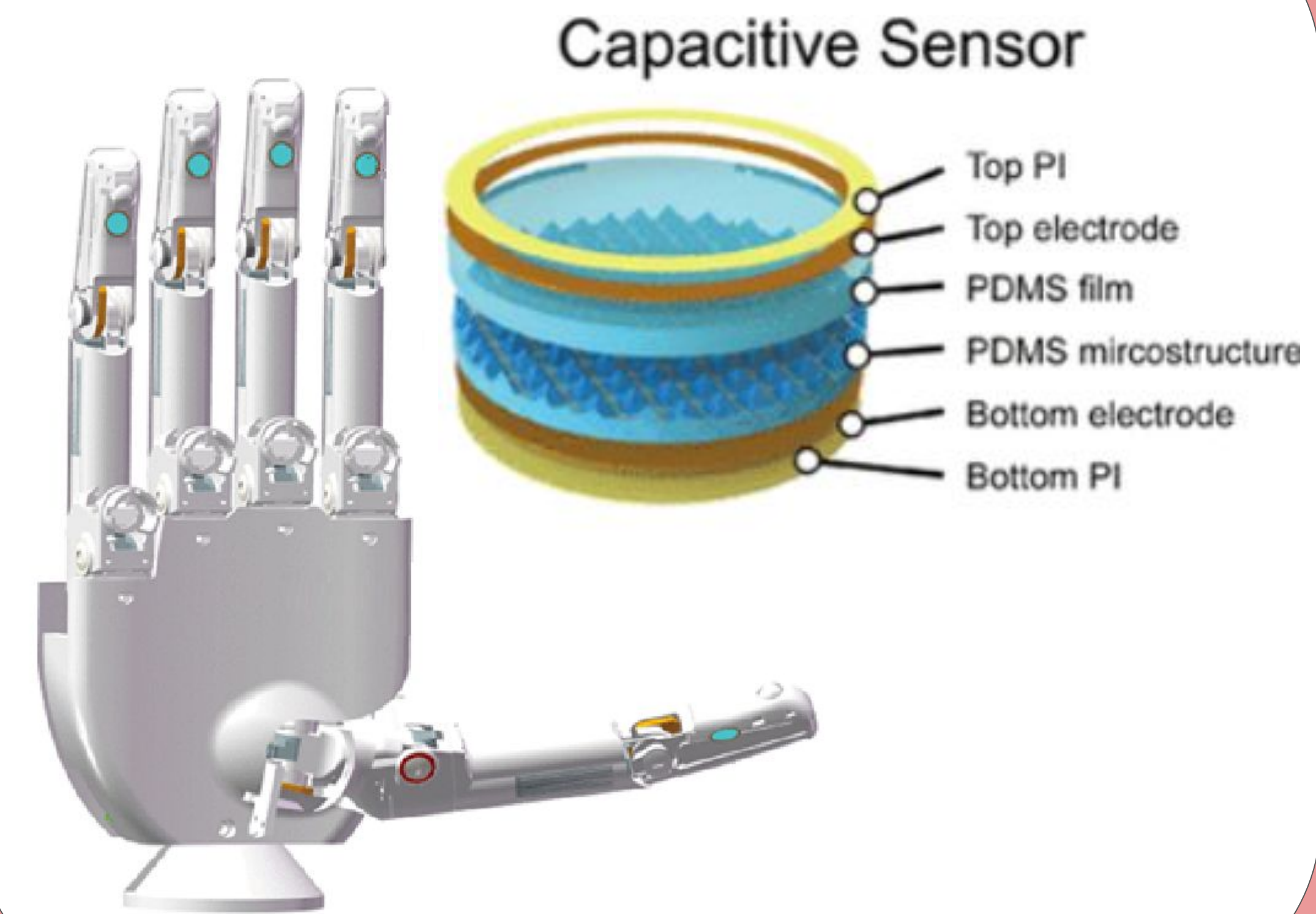


Fig 5: Robotic Hand equipped with Capacitive sensors (ACS)

- Extremely Sensitive (Good and Bad)
- Fragile
- Requires Maintenance

References

- <https://www.therobotreport.com/etri-develops-omnidirectional-tactile-sensors-for-robot-hands/>
- <https://www.sciencedirect.com/science/article/abs/pii/S2214860423002142>
- <https://pubs.acs.org/doi/10.1021/acsaelm.1c01274>
- https://figshare.mq.edu.au/articles/thesis/The_use_of_force_sensing_resistive_sensors_in_robotic_hands_and_applications/19428302?file=34520192
- <https://www.sciencedirect.com/science/article/abs/pii/S026322412401217X>

Lending a Hand: Giving Prosthetics the Ability to Feel

Fig 6: ETRI's omnidirectional tactile sensors (ETRI)

Key Concept: Tactile Sensors

A device classification for objects that measures information arising from physical interaction with its environment

Resistive

Figs 1, 2: User Glove (Left) and Robotic Hand (Right) equipped with Resistive sensors (Ross) Cheap Highly Durable Low Power

Capacitive

Fig 5: Robotic Hand equipped with Capacitive sensors (ACS) Extremely Sensitive (Good and Bad) Fragile Requires Maintenance

Piezoelectric

Converts physical attributes to electricity Self powers to transmit sensations Texture, vibrations, pressure Struggles with slow or extreme environments

Fig 3: i-Limb prosthetic hand equipped with a piezoelectric sensor (Additive)

Fig 4: Exploded Piezoelectric Sensor (Additive)

References

<https://www.therobotreport.com/etri-develops-omnidirectional-tactile-sensors-for-robot-hands/>

<https://www.sciencedirect.com/science/article/abs/pii/S2214860423002142>

<https://pubs.acs.org/doi/10.1021/acsaelm.1c01274>

https://figshare.mq.edu.au/articles/thesis/The_use_of_force_sensing_resistive_sensors_in_robotic_hand_applications/19428302?file=34520192

<https://www.sciencedirect.com/science/article/abs/pii/S026322412401217X>

Jeffrey Chan Farhan Mumin