



Press Release No.. 41 Mexico City, october 27th, 2024

Polytechnic Student Designs Mexican Sign Language Translator Glove; Wins James Dyson Award 2024

- The *Signal Glove* utilizes advanced fingertip sensors to accurately detect each letter's movement and display it on an LED screen
- With this prototype, which aims to improve the lives of people with hearing disabilities, Héctor Hernández from ESIME Azcapotzalco will now represent Mexico on the international stage

A student from the Instituto Politécnico Nacional (IPN) developed the *Signal Glove*, a translator glove for Mexican Sign Language (LSM) that seeks to enhance the quality of life for people with hearing impairments by facilitating communication with those who can hear but do not know sign language a vital aid in emergencies.

Its creator, Héctor Roberto Hernández Jiménez, a third-semester Industrial Robotics Engineering student at the Escuela Superior de Ingeniería Mecánica y Eléctrica (ESIME), Azcapotzalco Unit, explained that his prototype comprises two components: a fabric glove with sensors on each finger, a microcontroller, and an LED screen where letters appear.

The glove operates in several stages. When worn, a red LED light indicates system calibration, while a green light signals that the user can begin making sign language movements to communicate.

Unlike other models that use Flex sensors and resistors, Hernández notes that the *Signal Glove* incorporates five advanced gyroscopes, located at each fingertip, capable of accurately detecting the position and pressure of each finger.

With each movement, the sensors generate data—each corresponding to a letter—sent in real time to a control card placed on the user's forearm. This card receives the information and transmits it via Bluetooth to another device, allowing the recipient to spell out the message originating from the glove.

"The second component of the prototype is a small box with an LED screen and a control board that decodes the data through an algorithm, converting it into letters displayed on the screen," explained Hernández, who is also a technician in Electrical Control Systems from the Centro de Estudios Científicos y Tecnológicos (CECyT) 1 "Gonzalo Vázquez Vela."

The Polytechnic student disclosed that he is working on additional improvements, which will enable the glove to connect to phones, smartwatches, and any other device equipped with Bluetooth technology, enhancing its versatility. Furthermore, new algorithms and neural networks will be integrated to allow the formation of complete sentences.







Signal Glove is fast, comfortable, and made from durable yet affordable materials, making it an accessible option that, pending its patent, could become available to the general public in the future.

For all the benefits the glove offers, Héctor Hernández earned first place in the national phase of the James Dyson Award Mexico 2024 and will now compete internationally. This award seeks to promote innovative ideas among young engineers that provide technological advances with a positive societal impact.

For Héctor Hernández, winning this award has been immensely rewarding, as it represents recognition of his work and his passion for developing technology to benefit both Mexican society and humanity. He invites people to follow him on social media under the name Code&Invent on Facebook, CodeAndInvent on X and YouTube, and code_and_invent on Instagram.

===000===

