

# Vibrating Haptic Stimulation Glove for Virtual Reality Environments

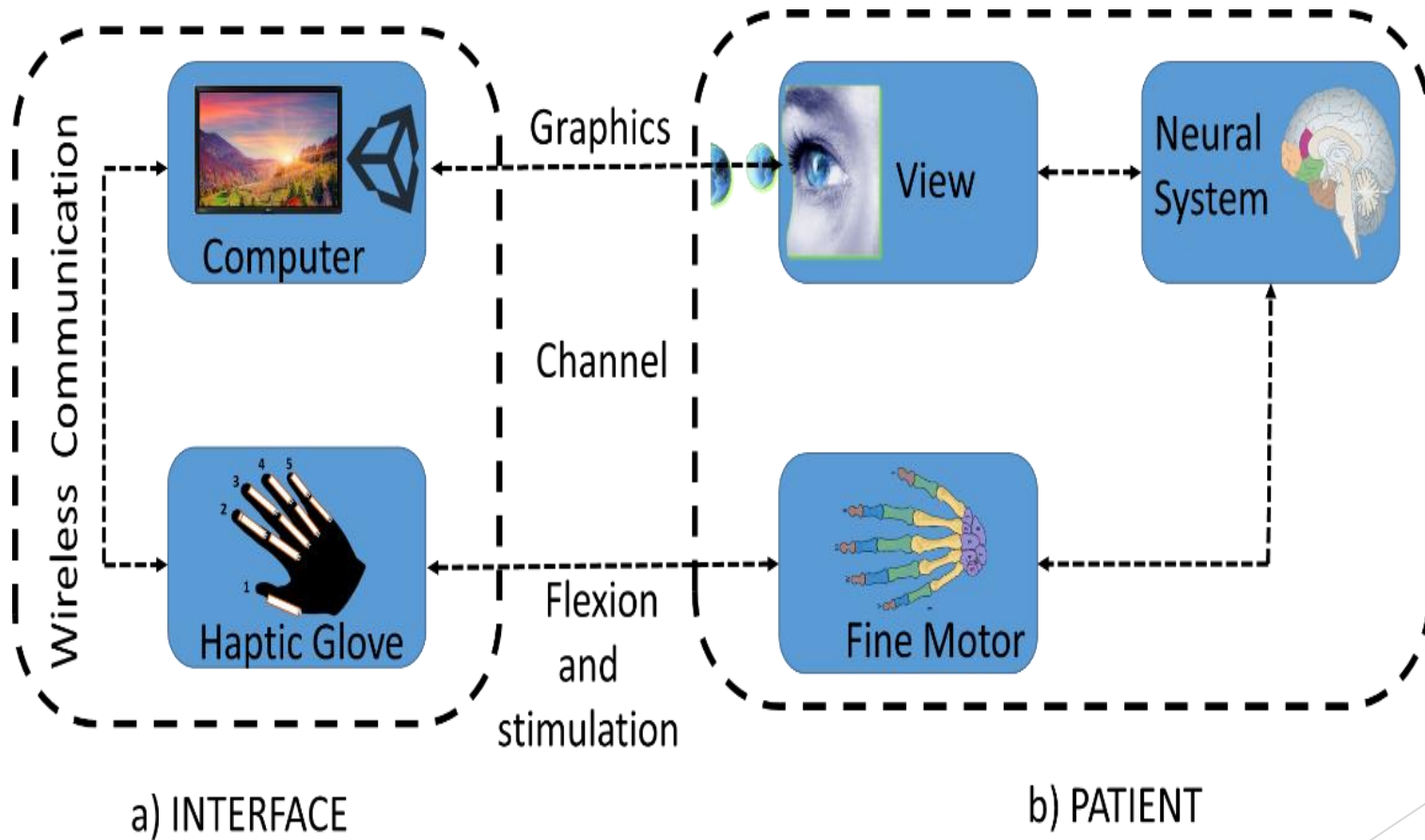


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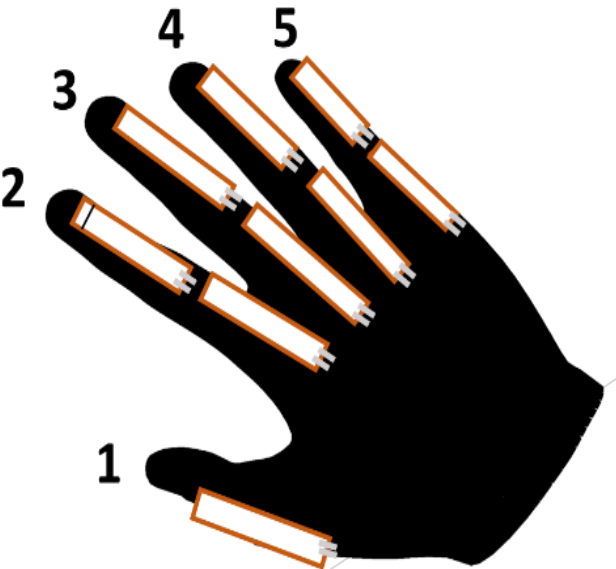
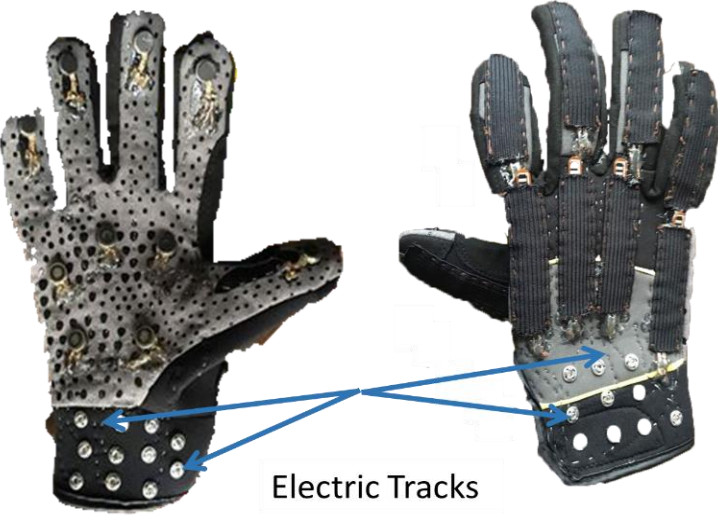
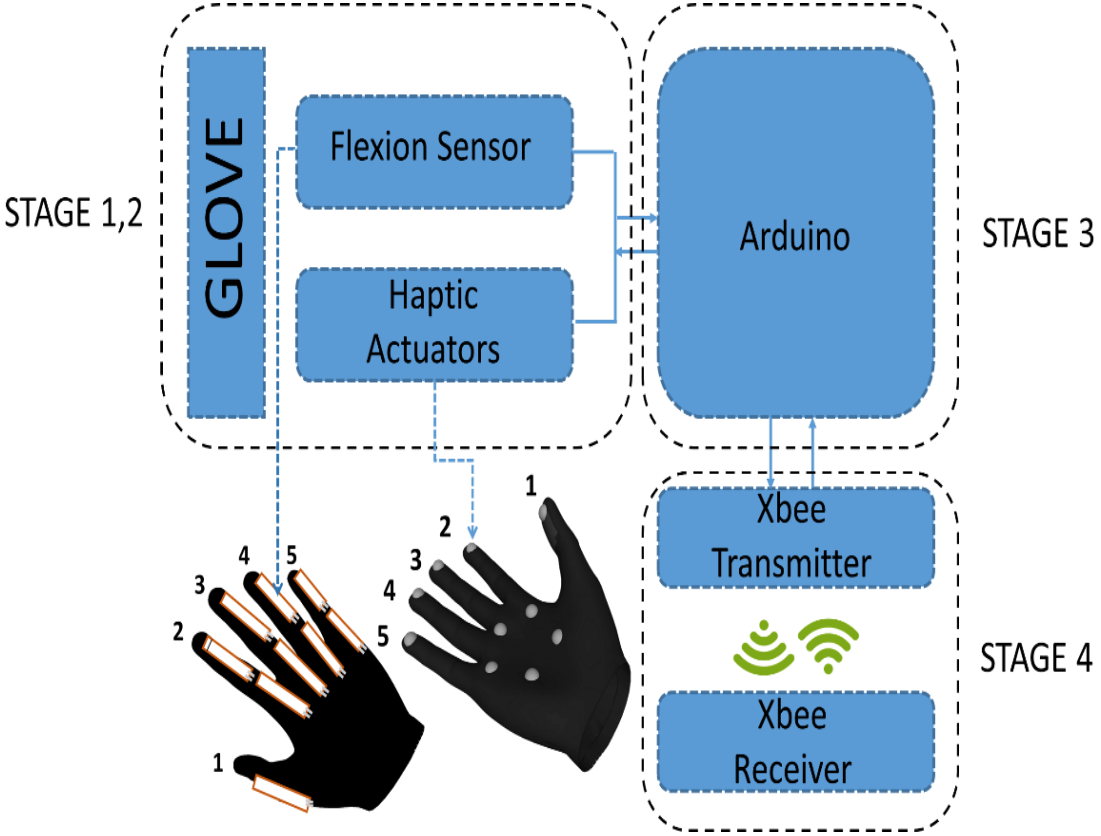


This research introduces the construction of a glove of haptic stimulation of bilateral communication between the virtual environment and the user. The structure is developed through the implementation of flexural sensors and vibratory actuators in charge of handling movement, gestures and contact with virtual surfaces. The system is based on the bilateral communication of a virtual environment in Unity 3D with the haptic glove which is in charge of analyzing the gestures used by the user and interacting with the virtual environment; the contact with surfaces and objects generates a vibratory feedback in the motile area subject to movement. The connection and transmission of data is done through wireless technologies responsible for creating a reliable and real-time communication. The results show the efficiency of the haptic stimulating glove oriented to virtual reality.

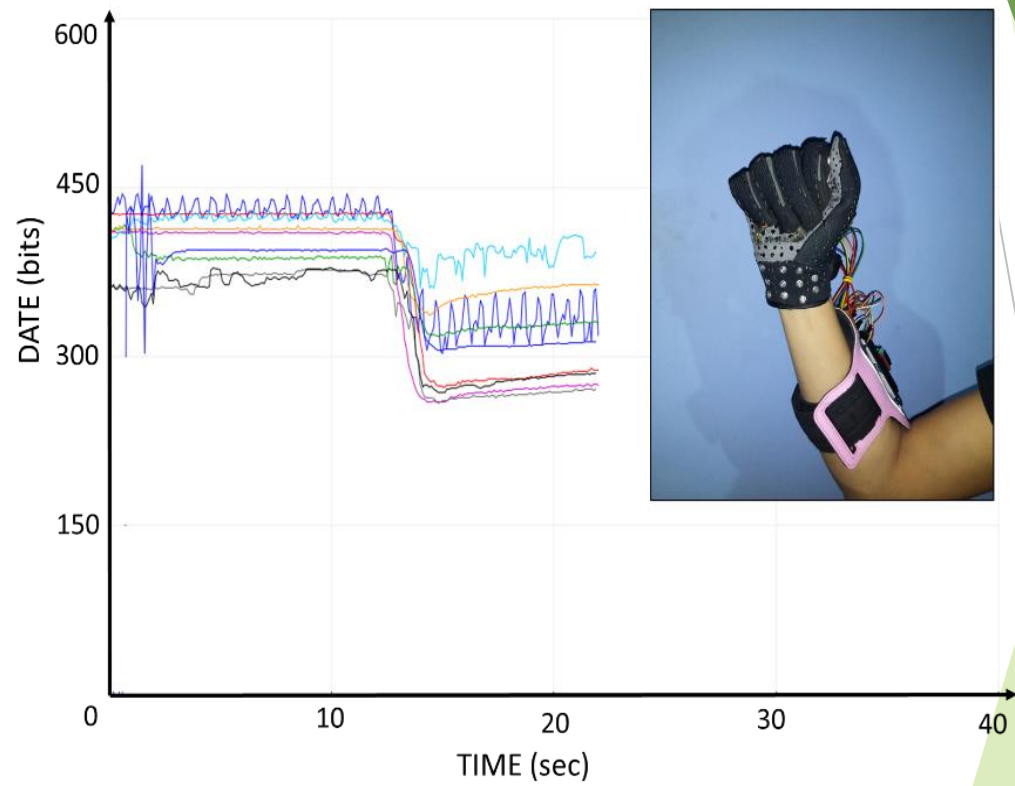
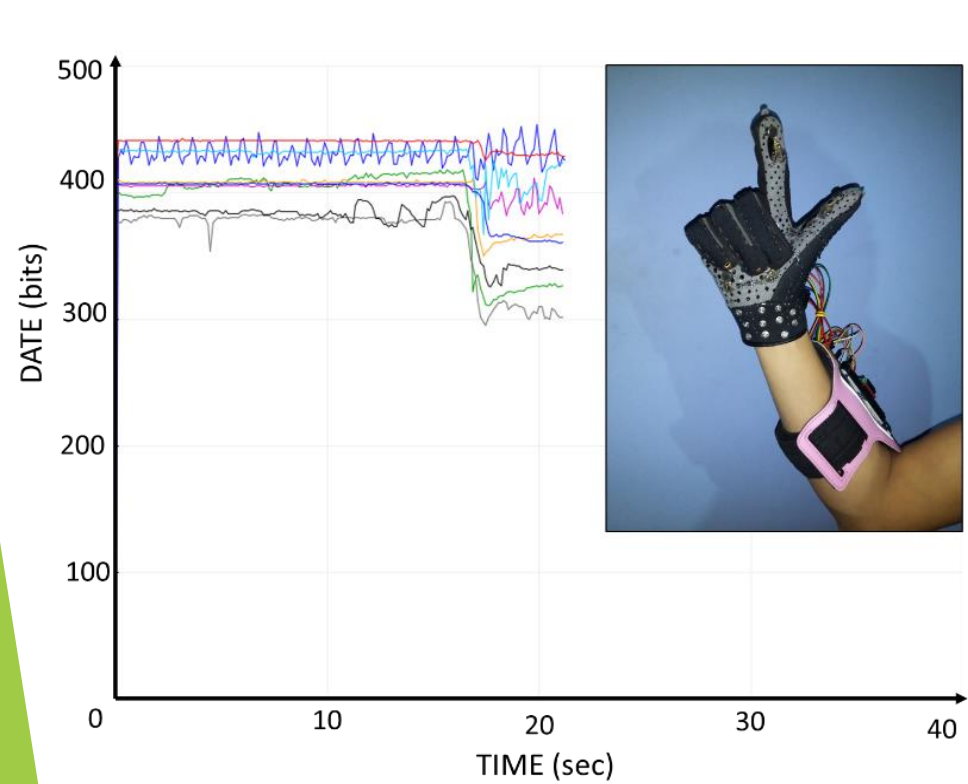
# SYSTEM STRUCTURE

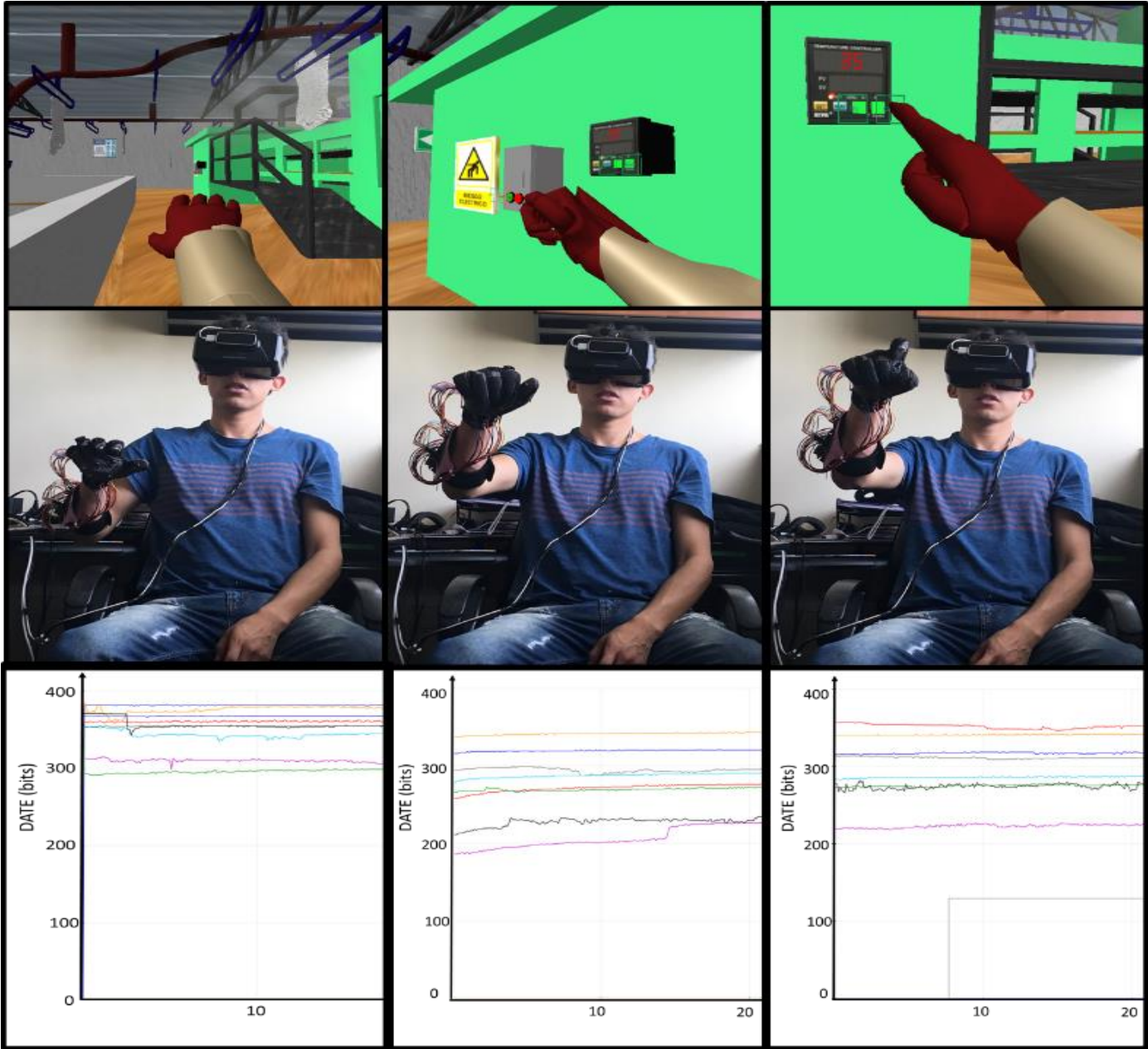


# CONSTRUCTION OF THE HAPTIC GLOVE



# EXPERIMENTAL RESULT





# CONCLUSIONS

- ▶ The results in the construction of the haptic stimulation glove show an ergonomics when interacting in virtual reality environments and the haptic stimulation provided by the vibratory actuators when feedback to the hand the surfaces generated in the virtual environment leads to a dive in which indicates the user when touching a virtual object by vibrating stimulation with different levels of intensity.
- ▶ In future work, we plan to perform rehabilitation training on real patients suffering from fine motor deficits and determine the efficiency of our implemented system in which the patient can manipulate and interact with virtual environments and receive haptic stimulation where the immersion provides the patient with an attractive rehabilitation when performing the exercises and improving their rehabilitation so that it is not monotonous and boring.

**Thanks**

The background features abstract, overlapping geometric shapes in various shades of green, ranging from light lime to dark forest green. These shapes are primarily located on the right side of the frame, creating a modern, layered effect against the white background.