

# Demo of vARitouch: Back of the Finger Device for Adding Variable Compliance to Rigid Objects

Gabriela Vega<sup>1</sup> [0000-0002-3487-5505], Valentin Martinez-Missir<sup>1</sup> [0000-0003-0605-1194], Dennis Wittchen<sup>1,2</sup> [0000-0002-6190-1799], Nihar Sabnis<sup>1</sup> [0000-0002-3160-251X], Karen Cochrane<sup>3</sup> [0000-0002-4563-0618], Audrey Girouard<sup>4</sup> [0000-0003-3223-105X], and Paul Strohmeier<sup>1</sup> [0000-0002-7442-2607]

<sup>1</sup> Max Planck Institute for Informatics, Saarland Informatics Campus, Saarbrücken, Germany {gvega, vmartine, nsabnis, pastroh}@mpi-inf.mpg.de

<sup>2</sup> Dresden University of Applied Sciences, Dresden, Germany {wittchen}@htw-dresden.de

<sup>3</sup> Carleton University, Ottawa, Canada {audrey.girouard}@carleton.ca

<sup>4</sup> University of Waterloo, Waterloo, Canada {karen.cochrane}@uwaterloo.ca

**Abstract.** We demo vARitouch, a back-of-the-finger wearable designed to modify the perceived tactile material properties of the un-instrumented world around us. vARitouch is positioned at the back of the finger, preserving natural tactile sensations while modifying rigid objects' perceived softness. By utilizing a pulse oximetry sensor to measure fingertip pressure and a small actuation system, vARitouch can effectively increase the perceived softness of rigid objects. Visitors will have the opportunity to experience the virtual compliance illusion firsthand, exploring how adjustments in the granularity of the haptic signal impact our perception of softness; finer adjustments result in a greater sense of compliance. The demo is concise, taking less than 5 minutes to showcase.

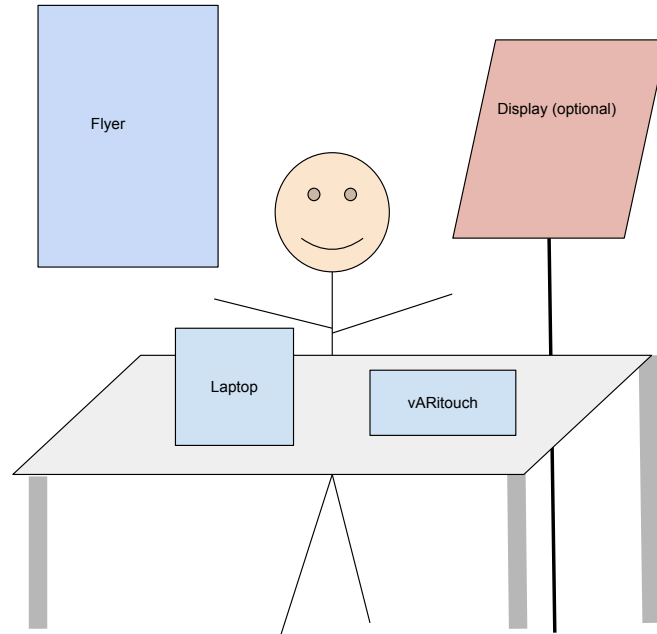
**Keywords:** haptics · wearable · motion-coupled vibration · sensing



**Fig. 1.** Visitors of our demo will feel a virtual compliance illusion after vARitouch is placed on one of their index finger nail.

## 1 Demo set-up

Figure 2 illustrates our desired system setup at the demo booth. Visitors will have the opportunity to experience vARitouch’s compliance illusion [Vega et al.(2024)] by wearing it on one of their index fingers. The device will be affixed to the visitor’s nail using false nail glue, allowing them to begin exploring the sensations evoked by the haptic feedback when interacting with rigid surfaces and objects, as shown in Figure 1. They can then perceive how their compliance perception is altered. Throughout this exploration, plots displaying the sensing pressure will be shown on a laptop, giving visitors a better understanding of the sensing mechanism. Once the exploration is complete, we will remove the device from the nail using alcohol. Multiple devices will be provided; while one participant experiences the demo, the following participant will already be set up to minimize delays between demonstrations. A short video demonstration can be found here: <https://youtu.be/KNrOfhVvBbo>.



**Fig. 2.** Mock-up. The demo booth features a central table with chairs that invite participants to engage comfortably, a laptop displaying visuals and powering the device, and a background display playing an informative video. A flyer offers additional project details.

## 2 Technical requirements

- Single table, ideally with two chairs, for visitors to the demo
- At least 2 power outlets
- Display to play video (optional)

## References

Vega et al.(2024). Gabriela Vega, Valentin Martinez-Missir, Dennis Wittchen, Nihar Sabnis, Audrey Girouard, Karen Anne Cochrane, and Strohmeier Paul. 2024. vARitouch: Back of the Finger Device for Adding Variable Compliance to Rigid Objects. In *Proceedings of the 2024 CHI Conference on Human Factors in Computing Systems*.