NebulaSuit: An Upper-Body High-Density Vibrotactile Suit Built With Scalable Hardware Solutions

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Vibrotactile devices are widely used in applications such as sensory substitution, rehabilitation, and virtual reality. However, existing vibrotactile systems often show a trade-off between density and coverage: they either provide dense arrays of actuators on a small body area, or sparse arrays of actuators on a large body surface. Because vibrotactile system designs require extensive work from mechanical, electrical, and software engineering, scaling up vibrotactile systems have always been a challenging problem.

In this paper, we present VibroStar, a high-resolution vibrotactile suit that covers the upper body surface with dense arrays of actuators. The suit has over 120 vibrotactile actuators placed on the body, following the resolution of human vibrotactile spatial acuity. Each actuator on the suit can be independently controlled, with varying intensities, frequencies, and waveforms. At the showcase, we will have multiple VR/non-VR applications for participants to try out, such as VR fitness game, Embodied music, visual impairment aids, etc.

More details can be seen here: https://huangbj16.github.io/

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