External Awards

2019 IEEE MTT-S Japan Young Engineer Award

Winner: Teruo Jyo, NTT Device Technology Laboratories
Date: November 28, 2019
Organization: IEEE Microwave Theory and Techniques Society (MTT-S) Japan Chapter

For "Fast and Accurate THz Permittivity Measurement Using a Self-heterodyne Technique and Multitone Signal with Nonuniform Intervals" and "An Accurate Permittivity Measurement Using Interferometric Phase Noise Averaging for Terahertz Imaging."

Published as: T. Jyo, H. Hamada, D. Kitayama, M. Yaita, A. E. Moutaouakil, H. Matsuzaki, and H. Nosaka, "Fast and Accurate THz Permittivity Measurement Using a Self-heterodyne Technique and Multitone Signal with Nonuniform Intervals," IEEE Trans. Microw. Theory Tech., Vol. 66, No. 10, pp. 4649–4657, 2018.
T. Jyo, H. Hamada, D. Kitayama, M. Yaita, and H. Nosaka, "An Accurate Permittivity Measurement Using Interferometric Phase Noise Averaging for Terahertz Imaging," IEEE Trans. Terahertz Sci. Technol., Vol. 8, No. 3, pp. 278–286, 2018.

Papers Published in Technical Journals and Conference Proceedings

The Dominant Limb Preferentially Stabilizes Posture in a Bimanual Task with Physical Coupling

A. Takagi, S. Maxwell, A. Melendez-Calderon, and E. Burdet
Journal of Neurophysiology, Vol. 123, No. 6, pp. 2154–2160, June 2020.

Humans are endowed with the ability to skillfully handle objects, like when holding a jar with the nondominant hand while opening the lid with the dominant hand. Dynamic dominance, a prevailing theory in handedness research, proposes that the nondominant hand is specialized for postural stability, which would explain why right-handed people hold the jar steady using the left hand. However, the underlying specialization of the nondominant hand has only been tested unimanually or in a bimanual task where the two hands had different functions. Using a dedicated dual-wrist robotic interface, we tested the dynamic dominance hypothesis in a bimanual task where both hands carry out the same function. We examined how left- and right-handed subjects held onto a vibrating virtual object using their wrists, which were physically coupled by the object. Muscular activity of the wrist flexors and extensors revealed a preference for cocontracting the dominant hand during both holding and transporting the object, which suggests proficiency in the dominant hand for stabilization, contradicting the dynamic dominance hypothesis. While the reliance on the dominant hand was partially explained by its greater strength, the Edinburgh inventory was a better predictor of the difference in the cocontraction between the dominant and nondominant hands. When provided with redundancy to stabilize the task, the dominant hand preferentially cocontracts to absorb perturbing forces.