

IoT が拓く未来
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HO Anh Van

北陸先端科学技術大学院大学 先端科学技術研究科
准教授

タッチ IoT : 触れるインターネット実現のための肌感覚送受信機の開発

§ 1. 研究成果の概要

In FY2021, we succeeded in proposal and elaboration several core technologies for large-area vision-based touch sensing devices, which are considered crucial toward fulfilling of the project's research purpose. We proposed "SimTacLS", a workflow that allows simulation of vision-based tactile sensing system, taking into account detailed deformation of skin and movements of markers. Then, a network (TacNet), trained mainly based on simulated tactile images, was applied for operation of actual tactile devices at high sampling rates. We also proposed ontology model for tactile devices so that it can utilized for higher level of application; as well as Web of Tactile Things that allows uploading, sharing tactile information from/to tactile devices. Last but not least, a database of tactile images, acquired from various interacting actions on tactile devices from nearly fifty subjects, was constructed, promising in understanding diverse states of contact in the physical human-machine interaction.

【代表的な原著論文情報】

- 1) "Large-Scale Vision-Based Tactile Sensing for Robot Links: Design, Modeling, and Evaluation." IEEE Trans. Robotics 37(2): 390-403 (2021)
- 2) "IoTouch: whole-body tactile sensing technology toward the tele-touch." Adv. Robotics 35(11): 685-696 (2021)
- 3) "Toward a Tactile Ontology for Semantic Interoperability of the Tactile Internet." ICSC 2022: 115-118, 2022