

社会変革に向けた ICT 基盤強化
2022 年度採択研究代表者

2022 年度
年次報告書

魏 博

早稲田大学 理工学術院総合研究所
次席研究員(研究院講師)

通信センシング統合による知的なネットワーク管理

研究成果の概要

This project aims at developing the intelligent network management technology which is secure, privacy-protected, and highly reliable by taking advantage of the physical information via the integrated communication and sensing.

In this year, the characteristics of the 5G network communication and the throughput prediction in 5G network was studied. In the experiment, throughput as well as other physical information parameters were collected. The prediction of the throughput revealed that the sudden change is difficult to be noticed. It is necessary to incorporate more physical information for network prediction and management. Meanwhile, the adaptive bitrate control (ABR) method in 5G network communication was developed towards 4K/8K video streaming. The developed ABR method was based on reinforcement learning and the neural network was designed and optimized for 5G communication. Experiments demonstrated that the proposed method outperformed the conventional algorithms. Besides, the research on the integrated communication and sensing in WiFi was carried out. The relationship of parameters was derived in detail which provides the accurate measurement of the status from the communication information. This finding can facilitate more precise ICS technologies.

The related results have been published in IEEE Journal, international and domestic conferences.