A Study on Embodied Expressions in Remote Teleconference
身体性表現を用いた遠隔コミュニケーション会議に関する研究

Student No.: 201921627
氏名: 小川　航平
Name: Kohei Ogawa

I propose a remote communication system which introduced depth sensing technology. I also use it to conduct remote teaching on 3D built objects, and investigated the changes in people's communication. Depth sensors can measure a shape of an object by measuring the distance to objects. However, the use cases of those depth sensors have been utilized only by specialists in special fields. Sensors that recognize human motion, shape, and posture have been shipped in large numbers and have been used in many studies in HCI (Human-Computer Interaction) industry, however they have not been widely used as sensors for general human use. In such a situation, mobile devices equipped with depth sensors have been released and applications and features using the technology have been proposed, and the shipment volume and depth sensing market are about to increase significantly. Considering this background, it is expected that new ways of communicating will be created according to people's communication methods and use cases.

In this study, I focus on the field of telecommunication, starting from the consideration of the object to be photographed, and then I take up two specific use cases to investigate the possibility of new applications of depth sensors for personal users. For that reason, I designed and implemented a telecommunication system using the depth sensor in a videoconferencing system. The system allows the user to change the viewpoint of the image of the caller in the video conference. I also adopted teaching as a task in which the results of communication are clearly visible in order to investigate the changes in people's communication.

The results also showed the interestingness of the teleteaching experience and the effectiveness of the proposed telecommunication system. Similarly, the results showed that remote teaching is difficult even for the task of 3D construction when the method of construction, the method of assembly and the appearance of the assembled object are different.In terms of systems and communication, 70% of participants answered that a viewpoint change function was necessary, and 90% answered that a viewpoint change function would make it easier to communicate intentions and instructions, etc.

In the future, it is necessary to investigate the use case of remote teaching, where real-time and depth data are more required to limit the relative instructions. The discussions and limitations of the system described in this paper will lead to further research into distance communication for personal use cases.

Principal Academic Advisor: Yoichi OCHIAI
Secondary Academic Advisor: Sayan SARCAR