Person Region Extraction and Background Replacement in Images for Privacy Protection

Shota SATO*, Yoichi KAGEYAMA*, Chikako ISHIZAWA* and Makoto NISHIDA**

*Department of Mathematical Science and Electrical-Electronic-Computer Engineering,
Graduate School of Engineering Science,
Akita University, 1-1, Tegata Gakuen-machi, Akita-shi, Akita 010-8502, Japan
**The Open University of Japan, 1-1, Tegata Gakuen-machi, Akita-shi, Akita 010-8502, Japan
E-mail:kageyama@ie.akita-u.ac.jp

Elderly care is an important requirement in an aging society. Video chat has been used as a support tool to watch over elderly people from remote places. Caregivers can check the conditions of elderly people through video chat. However, in a video chat, because a camera captures information on activities and things present in the room, the potential leakage of private or confidential information is of great concern. Therefore, in order to improve the security and quality of life, it is necessary to protect privacy in using video chat to monitor elderly people. To that end, it will suffice to extract only a person from the camera image in real time and replace background information with a predetermined image. In addition, background replacement can improve the extraction accuracy of a person by using a monochromatic background such as a chrome frame processing. When assuming use in daily life, it is necessary to extract people from the various objects located in the living space, without using background papers. In this paper, we propose a background replacement method for privacy protection in the elderly care system with regard to person extraction during video chat.

Keywords : Elderly care, support for monitoring elderly people, privacy protection