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EDITORS AND COMPILERS:

Prof. Madya Dr. Shafinar Binti Ismail
Mohd Halim Bin Mahphoth
Aemillyawaty Binti Abas
Fazlina Mohd Radzi
Aidah Alias
Ilinadia Jamil
Nor Yus Shahirah Hassan
Shafirah Shaari
Farihan Azahari

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Universiti Teknologi MARA MELAKA
KM26 Jalan Lendu,
78000 Alor Gajah Melaka
Tel +606-5582094/ +606-5582190 / +606-5582113
Web: www.miiex2017.com

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DATA COMMUNICATION LINKING NAO ROBOT AND IORT NETWORK IN AUTISM'S TELE-REHABILITATION THERAPY

Muhammad Aliff Rosly , Dayana Kamaruzaman, Syamimi Shamsuddin,
& Hanafiah Yussof

CENTER FOR HUMANOID ROBOTS AND BIO-SENSING (HUROBS), FACULTY OF
MECHANICAL ENGINEERING, UNIVERSITI TEKNOLOGI MARA, SHAH ALAM,
SELANGOR, MALAYSIA

Abstract

Autism is a lifelong developmental disability that effects the brain's normal development of social and communication skills. Robot-mediated intervention utilizing NAO robot via tele-rehabilitation network has been introduced as latest technology-based solution for autism therapy. This latest technology-based solution aims to eliminate the distance barrier to serve as practical solutions to the autism population. Meanwhile, the Internet of Robotics Things (IoRT) has been identified as the powerful tool offers promising solutions for connectivity of intelligent robotic devices in tele-rehabilitation environment. However, the fundamental issue on transferring data between NAO robot and IoRT network has remains as the main problem that prevents the tele-rehabilitation system to be realized. As technological solution for this problem, a communication concept linking NAO Robot and IoRT networks such as Microsoft Azure and ThinkSpeak is proposed. The proposed concept consists of data communication through NAO Robot NAOqi APIs, Python SDK, and IoRT network architectures. It enables two-way communication between NAO robot and IoRT networks, and allows NAO robot as "things" to communicate and interact with autism patient and transfer data over pervasive networks using Internet protocols. Results show that, the communication between NAO robot NAOqi and IoRT network such as Microsoft Azure and ThinkSpeak through Python SDK is feasible. As a conclusion, the developed concept manages to solve the two-ways communication issue in robot-mediated intervention environment.