別紙２

Results report

１． Title of Research and Development： Cortically-triggered robotic hand orthosis for home-based therapy and assistance in activities of daily living

２． Principal Investigator：Jumpei Arata (Associate Professor in Department of Mechanical Engineering, Faculty of Engineering, Kyushu University)

３． Counterpart Principal investigator：Roger Gassert (Associate Professor in Department of Health Sciences and Technology, ETH Zurich (Switzerland)

４． Results of Research and Development:

This project aims to develop and evaluate a brain-triggered robotic hand orthosis to provide assistance and therapy in activities of daily living (ADL) for neurological patients and aging persons with severe hand impairment. For the first time, a wearable brain-robot interface (BRI) and an innovative, lightweight robotic hand orthosis will be combined to enable this novel mode of therapy and assistance in the clinic and at home.

In the current stage of the project, we have developed a preliminary BRI combined with the robotic hand orthosis and a commercialized NIRS device. The signal from NIRS device is currently processed by a simple method (Linear Discriminant Analysis) and will be further investigated in the next year. A method for adapting the robot on individual patients is under investigation, showing positive feasibility on a preliminary stage prototype that consists of a commercialized 3D scanner and a CAD algorithm that directly output the 3D model data to be printed by a 3D printer.