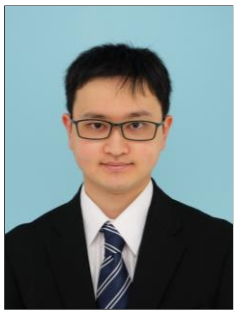

Myoelectric Prosthetic Hand System with Image Processing using Visuomotor Integration Model

Motoi MATSUDA
Assistant Professor, M. Eng.
Email : matsuda.m@gifu-nct.ac.jp

Research Fields robotics, intelligent mechanical systems

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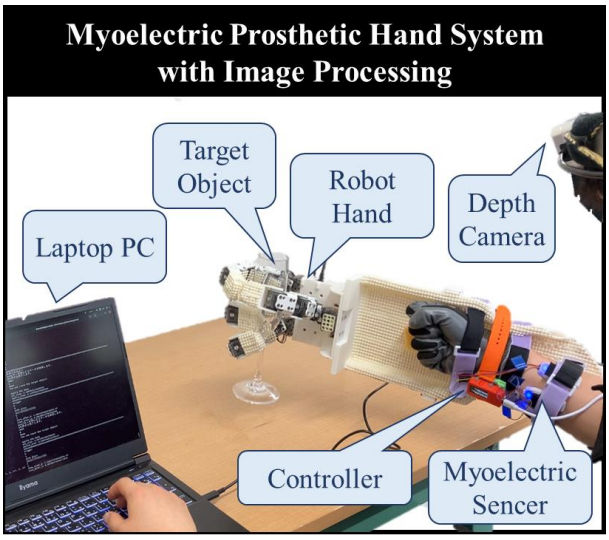
Research Outline

Myoelectric Prosthetic Hand System with Image Processing

For those who are missing a hand, the use of a myoelectric prosthetic hand, which operates the prosthetic hand from myoelectric potential changes produced by contraction of the arm muscles, can be very effective. However, it has been reported that about half of upper-limb amputees do not use prosthetic hands due to factors such as low functionality. One of the main reasons is that the myoelectric signals obtained are minute, inaccurate, resulting in low functionality. On the other hand, grasp an object by image recognition using deep learning, which has been developed remarkably in recent years, can calculate the hand posture suitable for the object shape. In this research, myoelectric prosthetic hands are combined with image processing to develop a highly functional prosthetic hand system.



Grasp Control of a Multi-fingered Robot Hand using a Visuomotor Integration Mode

When a person grasps an object, he/she selects an appropriate grasping position and posture by recalling not only visual information but also motor information of the hand and arm that have grasped various objects in the past. A neural network model that integrates different sensory information (visuomotor transformation model) has been proposed based on such a human motor strategy. In this study, we use images as visual information and a multi-fingered robot hand as motor information. We improve the visuomotor transformation model so that it can be applied to grasp objects in the living space and verify its usefulness.