Hayashibe-Owaki Lab.

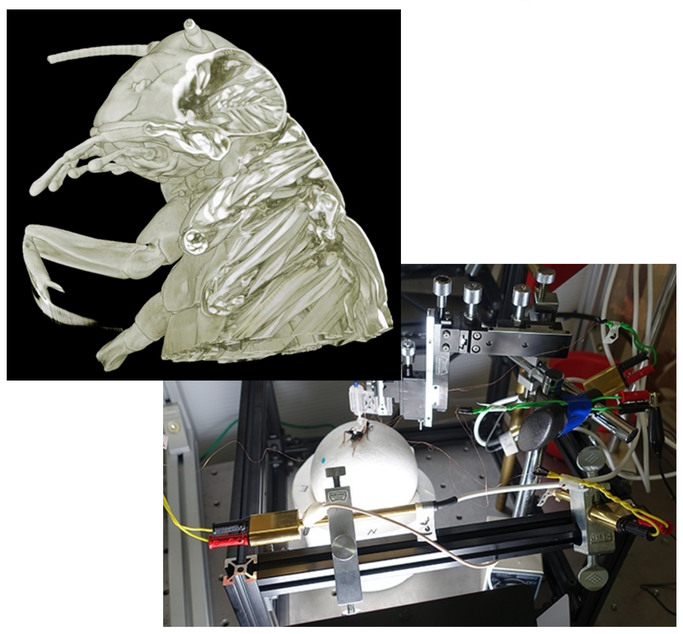
Robot Systems, Neuro-Robotics

TOHOKU UNIVERSITY

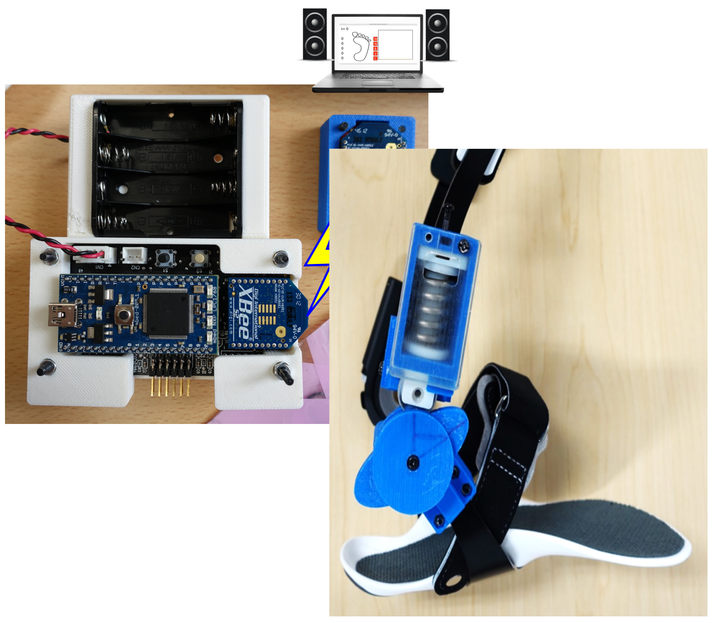
Neuroscience for Robotics, Robotics for Neuroscience

Recent era is referred as the century of robots and AI. However, especially in terms of adaptive interaction with the real-world environment, there are still many things we should learn from human advanced motion control and sensory functions. In this lab, we investigate toward a deep understanding of human environmental adaptation, with the approach of both engineering and brain science. Therefore, we study on motor control and learning mechanism at a level that can be explained by brain science with robotics technology. We work on Neurorobotics: neuroscience for robotics and robotics for neuroscience. We also aim for neurorehabilitation inspired by Neurorobotics.

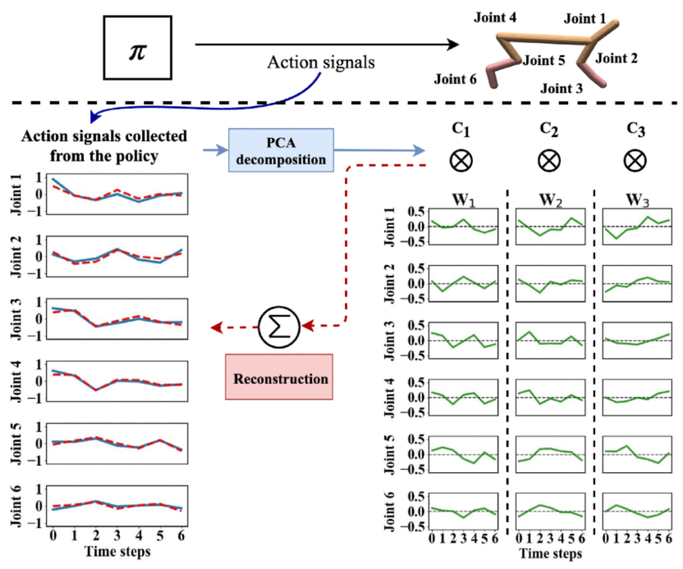
Bio-logging and bio-hacking for insect walking



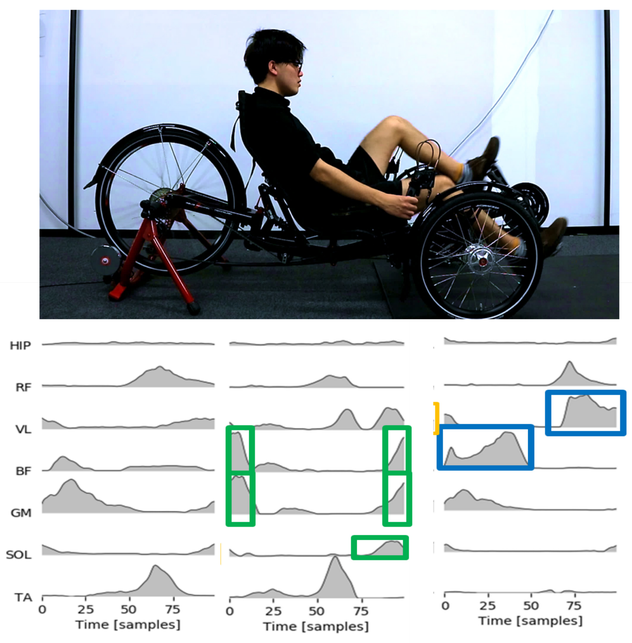
Rehabilitation systems by using robotics technology



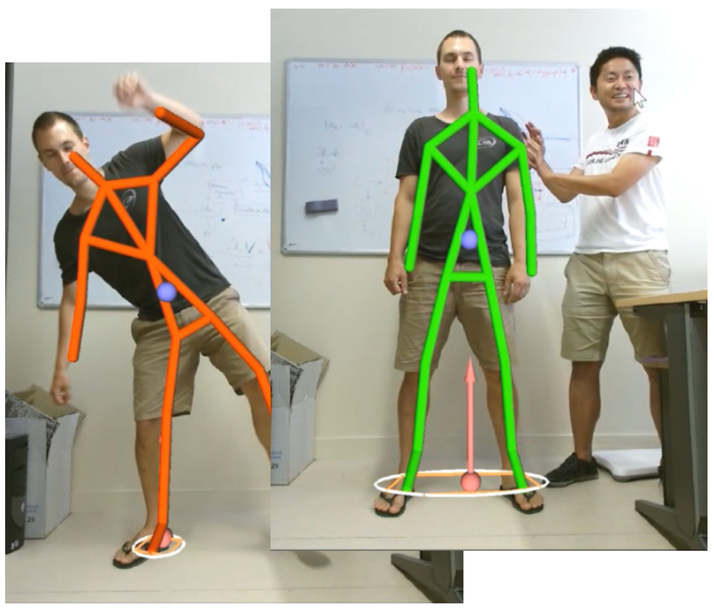
Motor synergy development via deep reinforcement learning



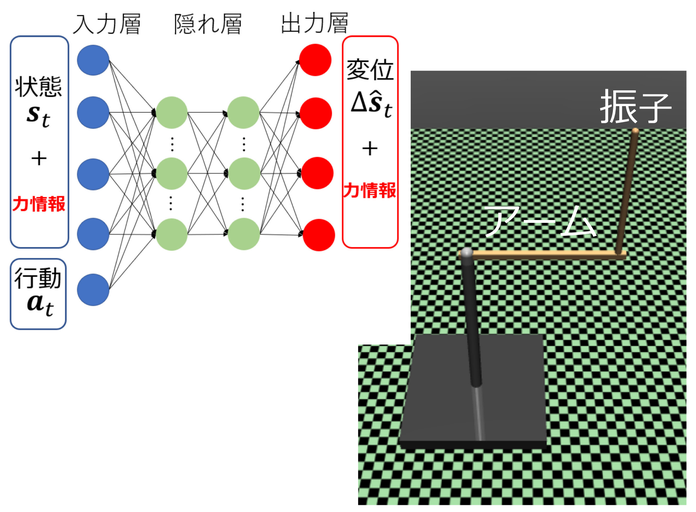
Muscle synergy transition during cycling movements



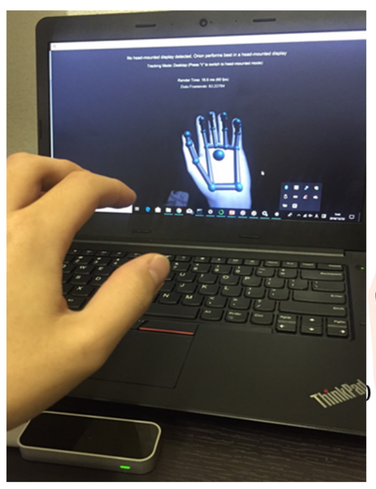
Persobalance: Personalized balance estimation with centroidal momentum



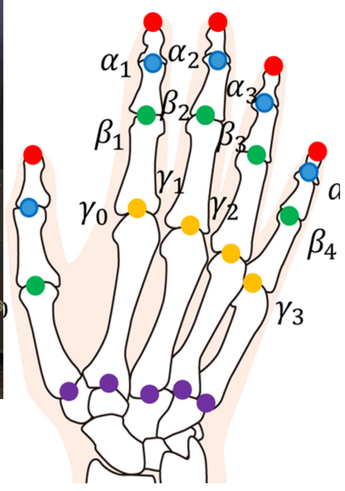
Reinforcement Learning based on state prediction control with neural networks



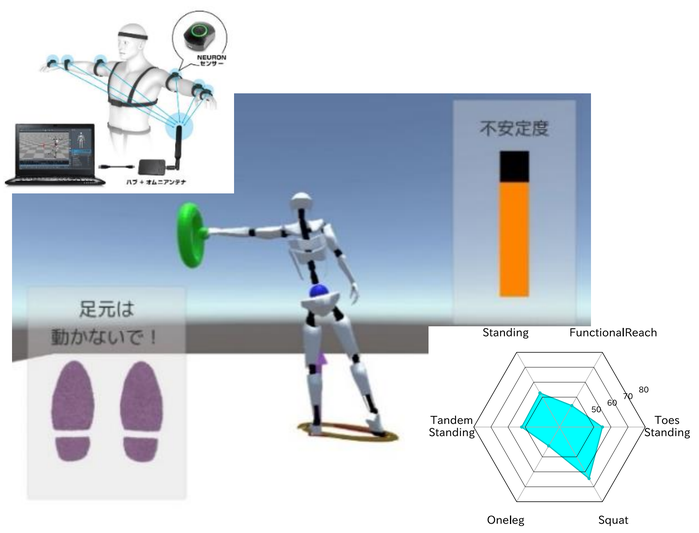
Evaluation of human hand gestures by using LSTM



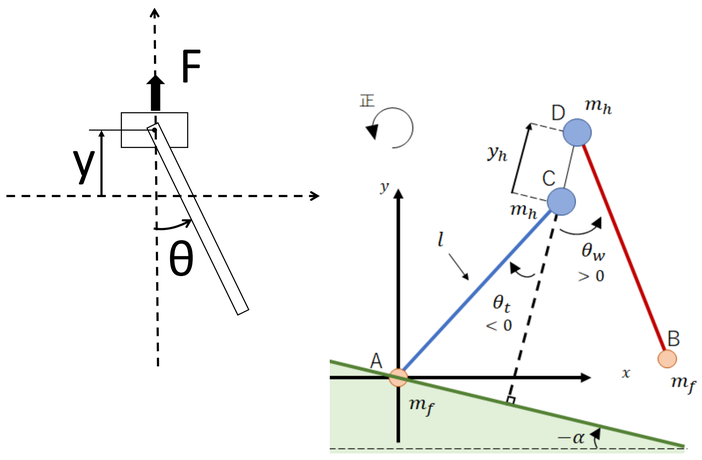
Leap motion



Automatic body balance evaluation with wearable Mocap system



Learning of passive dynamics via deep reinforcement learning and its application for walking robot control



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