Biography

Jun Morimoto is head of department of Dept. of Brain Robot Interface at ATR Computational Neuroscience Laboratories. He received his Ph.D. in information science from Nara Institute of Science and Technology (NAIST), Nara, Japan, in 2001.From 2001 to 2002, he was a postdoctoral fellow at the Robotics Institute, Carnegie Mellon University, Pittsburgh, PA, USA..

Exoskeleton Robots for Rehabilitation

Abstract:
We introduce our exoskeleton robots for assisting human movements and for rehabilitation. As a part of this talk, we introduce our estimation method of human joint movements from measured EMG signals for assistive robot control. We focus on how to estimate joint movements using multiple EMG electrodes even under sensor failure situations. In real world applications, EMG sensor electrodes might become disconnected or detached from skin surfaces. If we consider EMG-based robot control for assistive robots, such sensor failures lead to significant errors in the estimation of user joint movements. To cope with these sensor failures, we propose a state estimation model that takes uncertain observations into account. Sensor channel anomalies are found by checking the covariance of the EMG signals measured by multiple EMG