

# NIPS Mini-Workshop

## “Neural Decoding and Brain-Computer Interfaces”

Date; July 1 (Mon), 2013

Place; Conference Room at NIPS 1F

Organizers; Tadashi Isa (NIPS), Yukio Nishimura (NIPS), Hidenori Watanabe (NIPS), Tatsuya Umeda (Yokohama City Univ.)

### *Program*

- 10:00-10:10      **Opening remark**  
*Tadashi Isa (NIPS)*
- Session 1 “Motor Decoding”
- 10:10-10:40      **Sparse Bayesian inference methods for decoding 3D reach and grasp kinematics and joint angles with primary motor cortical ensembles**  
*Kazutaka Takahashi, University of Chicago, USA*
- 10:40-11:10      **A novel tool for understanding motor and cognitive functions**  
*Naotaka Fujii, RIKEN BSI, Wako, Japan*
- 11:10-11:20      **Coffee break**
- 11:20-11:50      **Brain Machine Interface based on musculo-skeletal model**  
*Yasuharu Koike, Tokyo Institute of Technology, Japan*
- 11:50-13:00      **Discussion with Lunch**
- Session 2 “Somatosensory decoding”
- 13:00-13:30      **Sensory feedback interfaces in the dorsal root ganglia**  
*Douglas Weber, University of Pittsburgh, USA*
- 13:30-14:00      **Encoding the forelimb joint kinematics by the dorsal root ganglion neurons in monkeys**  
*Tatsuya Umeda, Yokohama City University, Japan*
- 14:00-14:30      **Sensory Responses in the Motor Cortex and their implications for Brain-Machine Interfaces**  
*Aaron Suminski, University of Chicago, USA*

14:30-14:50     **Coffee break**

Session 3 “Closed loop BCI”

14:50-15:20     **Restoring Volitional Control via Artificial neural connection**

*Yukio Nishimura, NIPS, Japan*

15:20-15:50     **Physiological mechanism of deep brain stimulation**

*Atsushi Nambu, NIPS, Japan*

15:50-16:10     **Coffee break**

Session 4 “Clinical application”

16:10-16:40     **Efficacy of Brain-Machine-Interfaces in chronic stroke  
rehabilitation**

*Ander Ramos-Murguialday, University of Tübingen, Germany*

16:40-17:10     **Brain machine interfaces using human electrocorticograms**

*Masayuki Hirata, Osaka University, Japan*

17:10-17:40     **Decoding sensorimotor cortex excitability using scalp  
electroencephalogram in humans**

*Junichi Ushiba, Keio University, Japan*

17:40-18:00     **Closing remark**

*Yukio Nishimura (NIPS)*

18:00-20:00     **Discussion with Dinner**