

日程

| 第1日目 9月2日(水) | | | |
|--------------|---|--|---------------|
| | A会場(1202 講義室) | B会場(1203 講義室) | C会場(1204 講義室) |
| 午前 | 10:00-11:15 1A1 脳波解析 | 10:00-11:15 1B1 福祉工学 1 | |
| | 11:30-13:00 1L ニューロエンジニアリング(OS ポスター発表) (L会場: ラーニングアゴラ) | | |
| 午後 | 13:00-15:00 学生奨励賞選奨特別セッション (S会場: 2201 講義室) | | |
| | 15:00-16:00 特別講演 1 黒岩 義之 先生 (S会場: 2201 講義室) | | |
| | 16:00-18:00 1A2 ニューロエンジニアリング(OS) | 16:00-18:00 1B2 生命情報工学における電子顕微鏡利用(OS) | |

| 第2日目 9月3日(木) | | | |
|--|--|--|--|
| | A会場(1202 講義室) | B会場(1203 講義室) | C会場(1204 講義室) |
| 午前 | 10:00-12:00 2A1 Human motor control : Intermittency and related topics (OS) | 10:45-12:00 2B1 脳と視知覚 | 10:45-12:00 MICT 研究会 |
| | 午後 | 13:00-14:15 2A2 脳機能計測 | 13:00-14:30 2B2 信号処理・シミュレーション |
| 14:40-16:40 2A3 医療をイノベーションするシステム思考(OS) | | 14:40-16:40 2B3 睡眠工学:睡眠研究における工学的視点の活用(OS) | 14:40-15:30 MICT 研究会 15:35-16:35 MICT 研究会 |
| 16:50-17:50 特別講演 2 白川 修一郎 先生 (S会場: 2201 講義室) | | | |
| 18:00-20:00 技術交流会 (L会場: ラーニングアゴラ) | | | |

| 第3日目 9月4日(金) | | | |
|--------------|---|--|---------------------------|
| | A会場(1202 講義室) | B会場(1203 講義室) | C会場(1204 講義室) |
| 午前 | 10:00-12:00 3A1 様々なBCIsとそれらの教育・医療応用 1 (OS) | 10:00-12:00 3B1 ウェアラブルモニタ最前線:メタボ対策から介護までの応用(OS) | 10:00-11:30 3C1 福祉工学 2 |
| | 13:00-14:00 特別講演 3 倉田 博之 先生 (S会場: 2201 講義室) | | |
| 午後 | 14:00-15:30 3A2 様々なBCIsとそれらの教育・医療応用 2 (OS) | 14:00-15:15 3B2 運動 | 14:00-15:15 3C2 自律系解析 |

1A2,1L : ニューロエンジニアリングは電気学会 C 部門 医用生体工学技術委員会と日本生体医工学会「ニューロインフォマティクスにおける ME」との共催

MICT 研究会は電子情報通信学会 ヘルスケア・医療情報通信技術研究専門委員会 (Technical Committee on Healthcare and Medical Information Communication Technology) との併催

特別講演

- (1) Room S 15:00-16:00 Wednesday, September 2
第1日目 S会場 (2201 講義室)
9月2日(水) 15:00-16:00
- 講演者 黒岩 義之 先生 (財務省診療所)
Y. Kuroiwa (Medical Office, Ministry of Finance)
- 講演題目 Bedside Use of Electroencephalography, Evoked Potentials, and Electromyography for Evaluating Neurological Diseases
- 司会 山崎 敏正 (九州工業大学)
- (2) Room S 16:50-17:50 Thursday, September 3
第2日目 S会場 (2201 講義室)
9月3日(木) 16:50-17:50
- 講演者 白川 修一郎 先生 (睡眠評価研究機構)
S. Shirakawa (Sleep Assessment and Research Institute)
- 講演題目 Sleep management and sleep engineering
- 司会 井上 勝裕 (九州工業大学)
- (3) Room S 13:00-14:00 Friday, September 4
第3日目 S会場 (2201 講義室)
9月4日(金) 13:00-14:00
- 講演者 倉田 博之 先生 (九州工業大学)
H. Kurata (Kyushu Institute of Technology)
- 講演題目 Rational control and design of biological systems
- 司会 山崎 敏正 (九州工業大学)

学生奨励賞選奨特別セッション

Room S 13:00-15:00 Wednesday, September 2

第1日目 S会場 9月2日(水) 13:00-15:00

Session Chairs: Taishin Nomura (Osaka University),
Seiji Nakagawa (AIST)

- SR-1 **Automatic detection of heart rate and respiratory rate during sleep and its relation to sleep stage (3C2-2)**
Y. Saito¹, T. Ikenoue¹, T. Sugi¹, Y. Matsuda¹, S. Goto¹, T. Kogure², S. Shairakawa³
1 Saga University
2 Paramount Bed CO.,LTD
3 Sleep Assessment & Research Institute
- SR-2 **Quantifying Geometrical Artifacts in MRI Caused by a Ferromagnetic Metal --- Comparison of Measured Images and Simulated Images --- (2B2-5)**
強磁性金属によるMRI幾何学的アーチファクトの定量化
— 実画像とシミュレーション画像の比較 —
T. Tokitani¹, M. Akutagawa², T. Emoto², Y. Kinouchi², S. Konaka²
1 Grad. School of Advanced Tech. and Scie., The Univ. of Tokushima
2 Institute of Tech. and Scie., The Univ. of Tokushima
- SR-3 **Electrode-position- and equivalent-current-dipole-source-localization-based brain functional connectivity networks using scalp-recorded EEGs ~A comparison of Alzheimer's disease patients and healthy subjects~ (1A1-1)**
T. Urata¹, T. Toh², T. Yamazaki¹, Y. Kuroiwa³, Y. Baba⁴, K. Fujino⁴, T. Kurokawa⁴
1 Kyushu Institute of Technology
2 Nihon Unisys, Ltd
3 Medical Office, Ministry of Finance
4 University Hospital, Mizonokuchi Tokyo University School of Medicine
- SR-4 **Development of a capacitive sensor for quantitative evaluation of the urine absorption volume of a pad-type diaper (3B1-2)**
S. Konno¹, J. Kim¹, K. Sekine², K. Nakajima¹
1 University of Toyama
2 Kanazawa University
- SR-5 **Spatio-temporal imaging analysis on action potential initiations in the mouse cerebral cortex responding to electrical single-pulse microstimulations (1L-14)**
マウス脳皮質における単一パルス微小電気刺激に対する活動電位誘起の時空間イメージング解析
Y. Tanaka¹, Y. Hayashida¹, Y. Sakata¹, T. Yagi¹
1 Graduate School of Engineering, Osaka Univ

SR-6 Estimation of functional brain map of mice based on optical intrinsic imaging and independent component analysis (2A2-3)

内因性光イメージングと独立成分分析に基づくマウスの機能的脳地図の推定

Y. Yoshida¹, N. Katayama¹, D. Nakagawa¹, A. Karashima², M. Nakao¹

1 Tohoku University

2 Tohoku Institute of Technology

SR-7 Developing *in silico/in vitro* models of schizophrenia positive symptoms (1L-11)

T. Isomura^{1,2}, K. Kotani^{1,3}, Y. Jimbo¹

1 The University of Tokyo

2 Research Fellow of JSPS

3 JST, PRESTO

一般講演

Room A Wednesday, September 2

第 1 日目 A 会場 9 月 2 日 (水)

1A1 10:00~11:15

脳波解析

Session Chair: Keiji Iramina (Kyushu University)

**1A1-1 Electrode-position- and equivalent-current-dipole-source-localization-based brain functional connectivity networks using scalp-recorded EEGs
~A comparison of Alzheimer's disease patients and healthy subjects~**

T. Urata¹, T. Toh², T. Yamazaki¹, Y. Kuroiwa³, Y. Baba⁴, K. Fujino⁴, T. Kurokawa⁴

1 Kyushu Institute of Technology

2 Nihon Unisys, Ltd

3 Medical Office, Ministry of Finance

4 University Hospital, Mizonokuchi Tikyo University School of Medicine

1A1-2 A Study on Use of Deep Learning for Discriminating P300

K. Kawasaki¹, T. Yoshikawa¹, T. Furuhashi¹

1 Nagoya University

1A1-3 A Study on Effects of Task Difficulty and Age on P300 Peak Latency

K. Takakura¹, T. Yoshikawa¹, T. Furuhashi¹

1 Nagoya University

1A1-4 A study on the relation between sleep quality and EEG

睡眠の質と脳波の関係に関する研究

S. Kawasaki¹, K. Mori¹, M. Maeda¹, K. Inoue¹

1 Kyushu Institute of Technology

1A1-5 Studies on Bereitschafts Potential during Finger Motor Imagery

W. Taketoshi¹, K. Inoue¹, J. Kobayashi¹, M. Maeda¹

1 Kyushu Institute of Technology

1A2 16:00~18:00

ニューロエンジニアリング(口頭発表)

Organizers: Yasuhiko Jimbo (The University of Tokyo)
Takafumi Suzuki(NICT)

Session Chairs: Hirokazu Takahashi (The University of Tokyo),
Takafumi Suzuki (NICT)

【共催】電気学会C部門 医用生体工学技術委員会

日本生体医工学会「ニューロインフォマティクスにおけるME」

1A2-1 Independency and predictability in synchronization patterns of cultured cortical networks

Y. Yada^{1,2}, R. Kanzaki¹, H. Takahashi¹

1 The University of Tokyo

2 JSPS Research Fellow

1A2-2 The learning ability of time intervals of cultured neuronal network.

培養神経ネットワークが保持する時間情報について

H. Ito¹, W. Minoshima¹, S. N. Kudoh¹

1 Kwansai Gakuin University

1A2-3 Neuronal excitations in the rat cerebral cortex in vivo by using a wireless multi-channel stimulation system

ワイヤレス多チャンネル電気刺激システムの試作実機による in vivo ラット皮質神経興奮の誘発

Y. Hayashida¹, Y. Umehira¹, K. Takatani¹, S. Futami¹, S. Kameda², T. Kamata²,

A. U. Khan³, Y. Takeuchi³, M. Imai^{2,3}, T. Yagi^{1,2}

1 Graduate School of Engineering, Osaka University

2 The Center for Advanced Medical Engineering and Informatics, Osaka University

3 Graduate School of Information Science and Technology, Osaka University

1A2-4 Theta band oscillation of amygdala associated with hippocampal high frequency oscillation and fear memory

S. Fujiwara¹, T. Kubota¹, T. Funabashi¹, T. Akema¹

1 Department of Physiology, St. Marianna University School of Medicine

1A2-5 Acquisition of predictive optokinetic response and its relationship with the velocity storage mechanism

予測的な視運動性眼球運動の獲得と中枢速度蓄積機構の関係

S. Miki¹, K. Urase¹, R. Baker², Y. Hirata^{1,3}

1 Dept. Computer Science, Chubu Univ. Graduate School of Engineering

2 New York University Medical School

3 Dept. Robotic Science and Technology, Chubu Univ. College of Engineering

1A2-6 The Wake-Sleep Transition as an Opening of the Cortico-Thalamic Loop

I. Yamaguchi¹, F. Togo¹, A. Kishi¹, T. Nakamura¹, Y. Yamamoto¹

1 The University of Tokyo

Room B Wednesday, September 2

第 1 日目 B会場 9月2日 (水)

1B1 10:00~11:15

福祉工学 1

Session Chair: Takenao Sugi (Saga University)

- 1B1-1 Construction of ubiquitous biometric system using a portable microcomputer**
ポータブルなマイコンを用いたユビキタスな生体計測システムの構築
H. Miyata¹, T. Nakama¹, M. Goto¹, Y. Obata¹, R. Ikeda¹, K. Yunokuchi¹, A. Nuruki¹,
S. Eto¹, T. Yamanoue², Y. Sueyoshi¹, K. Takahashi³, M. Hamada⁴
1 Kagoshima University
2 Fukuyama University
3 Kumamoto higher vocational school
4 Tokyo University
- 1B1-2 Low-cost EMG measurement device for hands-free wheelchair control**
T. Ishibashi¹, Y. Oshiro¹, H. Shintani¹, M. Motoki¹, K. Hayama¹, H. Ohtsuka¹
1 National Institute of Technology, Kumamoto College
- 1B1-3 Measurement of EOG and EMG Using DC Amplifier and Its Application to Remote Operation System for a Mobile Robot**
O. Yano¹, T. Sugi¹, Y. Matsuda¹, S. Goto¹, N. Egashira²
1 Saga University
2 Kurume National College of Technology
- 1B1-4 Assistant System for Mobile Robot Arm Operation by Using Visual Servo**
H. Yanai¹, Y. Matsuda¹, T. Sugi¹, S. Goto¹, N. Egashira²
1 Saga University
2 Kurume National College of Technology
- 1B1-5 Reevaluate Feature Values of Muscular Activity based on Wavelet Coefficients for Forearm's Motion Recognition**
K. Yoshimura¹, H. Nagai¹, T. Nakamura¹
1 Kyushu Institute of Technology

1B2 16:00~18:00

生命情報工学における電子顕微鏡利用

Organizer: Takuo Yasunaga (Kyushu Institute of Technology)

Session Chair: Takuo Yasunaga (Kyushu Institute of Technology)

1B2-1 Development of user friendly system for image processing of electron microscopy by integrating web browser and PIONE with Eos.

T. Tsukamoto¹, T. Yasunaga¹

¹ Kyushu Institute of Technology

1B2-2 Development of virtual electron microscopy to supply unified user interface

A. Iwasaki¹, T. Tsuruta¹, M. Murakami¹, T. Yasunaga¹

¹ Kyushu Institute of Technology

1B2-3 Development of Eos/PIONE for three dimensional electron microscopy - Process control for image analysis in distributed environment -

T. Yasunaga^{1,2}, K. Yamaguchi^{2,3}

¹ Kyushu Institute of Technology

² JST SENTAN

³ NAU Data Inc.

1B2-4 Structural Analysis Techniques at Close-to-Life Conditions with Image Processing and Cryo-EM

S. Aramaki¹, T. Yasunaga^{1,2}

¹ Kyushu Institute of Technology

² JST SENTAN

Room L Wednesday, September 2

第 1 日目 L 会場 9 月 2 日 (水)

1L 11:30~13:00

ニューロエンジニアリング (ポスター発表)

Organizers: Yasuhiko Jimbo (The University of Tokyo)
Takafumi Suzuki (NICT)

Session Chairs: Arao Funase (Nagoya Institute of Technology),
Osamu Fukayama (The University of Tokyo)

【共催】電気学会C 部門 医用生体工学技術委員会

日本生体医工学会「ニューロインフォマティクスにおけるME」

- 1L-1 **Optical manipulation of cell surface molecules on neurons with surface plasmon resonance-based optical tweezers**
プラズモン光ピンセットによる神経細胞表面分子の集合操作
K. Miyauchi^{1,2}, K. Tawa², S. N. Kudoh², T. Taguchi³, C. Hosokawa¹
1 National Institute of Advanced Industrial Science and Technology (AIST)
2 Kansai Gakuin University
3 National Institute of Information and Communications Technology (NICT)
- 1L-2 **Alteration in excitatory/inhibitory balance within iPSC-derived neuronal network**
S. Iida¹, K. Shimba¹, K. Kotani^{1,2}, Y. Jimbo¹
1 The University of Tokyo
2 JST, PRESTO
- 1L-3 **Verification of Estimated Neuronal Soma Location and Migration Distance in Dissociated Culture on High Density CMOS Electrode Array**
神経細胞の分散培養系における高密度 CMOS 電極アレイで推定した細胞体位置及び移動量の検証
R. Yano¹, T. Mita¹, Y. Yada¹, D. Bakkum², R. Kanzaki¹, H. Takahashi¹
1 The University of Tokyo
2 Swiss Federal Institute of Technology in Zurich
- 1L-4 **In vitro model for monitoring stress-related response of hippocampal neuronal network mediated by HPA axis activation**
HPA 系ストレス応答に伴う神経活動変動の評価に向けた in vitro モデルの検討
S. Kaneko¹, K. Sakai¹, K. Shimba¹, K. Kotani^{1,2}, Y. Jimbo¹
1 The University of Tokyo
2 JST, PRESTO
- 1L-5 **Complex temporal pattern generation from cultured neurons with FORCE learning**
培養神経回路を用いた FORCE 学習による複雑な時系列パターンの生成
S. Yasuda¹, Y. Yada¹, T. Mita¹, R. Kanzaki¹, H. Takahashi¹
1 The University of Tokyo

- 1L-6 **Spontaneous activity pattern modified by transient inhibition of electrical spike activity in a cultured living neuronal network**
Y. Ooki¹, H. Ito¹, W. Minoshima¹, S. N.Kudoh¹
1 School of Science and Technology, Kwansei Gakuin University
- 1L-7 **Information Theoretical Analysis of Neural Response Dependent on Stimulation Frequency and Neuromodulator**
Y. Sato¹, T. Isomura¹, K. Kotani^{1,2}, Y. Jimbo¹
1 The University of Tokyo
2 JST, PRESTO
- 1L-8 **Embodiment of Neural Network Model with Plasticity**
可塑性のある神経回路モデルの身体化実験
S. Yasue¹, S. Yasuda¹, M. Tolba¹, Y. Yada¹, T. Mita¹, R. Kanzaki¹, H. Takahashi¹
1 The University of Tokyo
- 1L-9 **Maturation process of human iPS cell-derived neurons monitored by a microtunnel-electrode configuration**
K. Shimba¹, S. Iida¹, K. Sakai¹, K. Kotani^{1,2}, Y. Jimbo¹
1 The University of Tokyo
2 JST, PRESTO
- 1L-10 **Identification of a source of synchronized bursting in cultured neuronal networks**
培養神経回路の同期バースト発生を担う細胞群の探索
K. Furuike¹, Y. Yada¹, T. Mita¹, D. Bakkum², R. Kanzaki¹, H. Takahashi¹
1 The University of Tokyo
2 Swiss Federal Institute of Technology in Zurich
- 1L-11 **Developing *in silico/in vitro* models of schizophrenia positive symptoms**
T. Isomura^{1,2}, K. Kotani^{1,3}, Y. Jimbo¹
1 The University of Tokyo
2 Research Fellow of JSPS
3 JST, PRESTO
- 1L-12 **Impact of anesthesia on the sustained neural activities of rat auditory cortex**
ラットの聴覚野における定常的な神経活動パターンへの麻酔の影響
N. Wake¹, K. Ishizu¹, R. Kanzaki¹, H. Takahashi¹
1 University of Tokyo

- 1L-13 **A research on determining implanted coordinates of electrodes for a brain-machine interface in the basal ganglia**
大脳基底核ブレイン・マシン・インタフェースのための電極位置同定手法に関する研究
N. Sudo¹, O. Fukayama², Y. Naito², T. Woo³, Y. Inoue⁴, T. Isoyama¹, M. Sekino³,
Y. Abe¹, K. Mabuchi^{1,2}
1 Graduate School of Medicine, The University of Tokyo
2 Graduate School of Information Science and Technology, The University of Tokyo
3 Graduate School of Engineering, The University of Tokyo
4 Institute of Development, Aging and Cancer, Tohoku University
- 1L-14 **Spatio-temporal imaging analysis on action potential initiations in the mouse cerebral cortex responding to electrical single-pulse microstimulations**
マウス脳皮質における単一パルス微小電気刺激に対する活動電位誘起の時空間イメージング解析
Y. Tanaka¹, Y. Hayashida¹, Y. Sakata¹, T. Yagi¹
1 Graduate School of Engineering, Osaka Univ
- 1L-15 **Construction of the system for quantifying the preference to the frequency of the tone**
ラットの音の嗜好性を定量化する実験系の構築
R. Soga¹, T. I. Shiramatsu¹, R. Kanzaki¹, H. Takahashi¹
1 University of Tokyo
- 1L-16 **Removal of common-mode motion artifacts to record neural activities with multi-channel electrodes during locomotion**
多点電極 BMI による歩行関連電位計測のための体動に由来する同相信号成分除去
T. Hirano¹, N. Sudo¹, O. Fukayama¹, K. Mabuchi¹
1 The University of Tokyo
- 1L-17 **Pulse sequence of intra-cortical microstimulation for sensory perception**
感覚野への電気パルス列刺激による知覚の生成の基礎検討
T. Kuyama¹, T. I. Shiramatsu¹, R. Soga¹, K. Ishizu¹, R. Kanzaki¹, H. Takahashi¹
1 The University of Tokyo
- 1L-18 **AVR-based device to induce synaptic plasticity:
Study on time specification for a neurally-triggered stimulation**
AVR マイコンを用いたシナプス可塑性誘発デバイスの開発
- 入力の同期性に関する時間的性能の検討
Y. Naito¹, N. Sudo¹, O. Fukayama¹, K. Mabuchi¹
1 The University of Tokyo

- 1L-19 **Investigation of modification of neural population responses in Rat's nervous system connected to ECoG BMI**
M. Yokota¹, Y. Kunimura¹, T. Suzuki²
1 Osaka University
2 National Institute of Information and Communications Technology
- 1L-20 **Causality evaluation of signal transduction at thalamas and auditory cortex of rats**
ラット視床および聴覚野での信号伝達の因果性評価
K. Ishizu¹, T.I. Shiramatsu², H. Nagata¹, R. Kanzaki², H. Takahashi²
1The University of Tokyo
2 Research Center for Advanced Science and Technology
- 1L-21 **Development of in vivo flexible sensors for glutamate detection**
N. Kotake¹, T. Suzuki², K. Mabuchi³
1 National Fisheries University
2 National Institute of Information and Communications Technology
3 The University of Tokyo
- 1L-22 **Effects of vagus nerve stimulation on stimulus-specific adaptation in rat thalamus**
迷走神経刺激がラット視床の刺激選択的順応に及ぼす影響
R. Hitsuyu¹, T. I. Shiramatsu¹, K. Ishizu¹, R. Kanzaki¹, K. Ibayashi¹, K. Kawai²,
H. Takahashi¹
1 The University of Tokyo
2 NTT Medical Center
- 1L-23 **Study on electrical fields and currents in the brain by an intracranial extracellular impedance control towards neural functional modifications**
脳機能改変に向けた脳内インピーダンス制御における電場・電流分布の検討
S. Hoshino¹, O. Fukayama¹, T. Hoshino¹, K. Mabuchi¹
1 the University of Tokyo
- 1L-24 **Relationship between ERD/ERS in alpha/beta frequency band and Direction-Cue in press-button movements**
ボタン押し運動における Direction-Cue 提示時に観測される α/β 周波数帯の ERD/ERS について
S. Takahashi¹, S. Takagi¹, A. Funase^{1,2}, I. Takumi¹
1 Graduate school of Engineering, Nagoya Institute of Technology
2 Brain Science Institute, RIKEN

- 1L-25 **Human magnetoreception-related potentials and their enhancement with tEIC**
人間の地磁気刺激関連電位とその経頭蓋細胞外インピーダンス制御(tEIC)による顕在化
A. Matani¹, S. Shimojo², J.L. Kirschvink²
1 The University of Tokyo
2 California Institute of Technology
- 1L-26 **Study on a Visual Feedback for a Rehabilitation System using a Cycling Wheelchair Controlled with EEG signals**
EEG 制御足漕ぎ車椅子を用いたリハビリテーションへの視覚的フィードバック導入に関する検討
K. Kitaku¹, S. Nakatani², R. Ijiri², O. Fukayama¹, N. Araki², K. Mabuchi¹
1 The University of Tokyo
2 The University of Hyogo
- 1L-27 **EEG potential like bipolar spike related to Go-Cue in Cued-movements**
Cued-movement 時に観測される Go-Cue に起因したスパイク状の脳波の電位変動について
S. Takagi¹, S. Takahashi¹, A. Funase^{1,2}, I. Takumi¹
1 Graduate school of Engineering, Nagoya Institute of Technology
2 Brain Science Institute, RIKEN
- 1L-28 **Proposal of sound visualization device for hearing impaired**
聴覚障害者支援用の音視覚化デバイスの提案
S. Kawano¹, T. Yagi¹
1 Tokyo institute of technology
- 1L-29 **Evaluating cardiovascular dynamics by ultrasonic diagnosis robot at home**
在宅用超音波検査ロボットを用いた血管・血流動態評価手法の提案
S. Matsuno¹, T. Numata^{1,2}, N Kato¹, Y. Jimbo¹, K. Kotani^{1,3}
1 The University of Tokyo
2 Hitachi, Ltd.
3 JST, PRESTO

Room A Thursday, September 3

第2日目 A会場 9月3日（木）

2A1 10:00~12:00

Human motor control: Intermittency and related topics

Organizer: Taishin Nomura (Osaka University)

Session Chair: Taishin Nomura (Osaka University)

2A1-1 **Intermittent control and movement variability during human standing and walking**

T. Nomura¹, Y. Suzuki¹, Chunjiang Fu¹, N. Yoshikawa¹, K. Kiyono¹

¹ Graduate School of Engineering Science, Osaka University

2A1-2 **Human Intermittent Control: Dynamical Trap Theory and Virtual Stick Balancing**

I. Lubashevsky¹, A. Zgonnikov¹, S. Kanemoto¹, T. Suzuki¹

¹ University of Aizu

2A1-3 **Stick Balancing and Stochastic Resonance**

T. Ohira¹

¹ Nagoya University

2A1-4 **Brain activity on voluntary motion and its relation with body schema**

S. Suzuki¹

¹ Tokyo Denki University

2A2 13:00~14:15

脳機能計測

Session Chair: Seiji Nakagawa (AIST)

2A2-1 The influence of ACh on LTD induced by STDP protocol in the rat hippocampal CA1 network

E. Sugisaki¹, Y. Fukushima², S. Fujii³, T. Aihara¹

1 Tamagawa University

2 Kawasaki University of Medical Welfare

3 Yamagata University of Medicine

2A2-2 Influence of ACh on information processing in hippocampal CA1 area

アセチルコリンによる海馬 CA1 の記憶情報処理への影響

S. Fujiwara¹, G. Kaieda¹, N. Nakajima², H. Sasaki^{1,2}, T. Aihara^{1,2}

1 Electronic Information Engineering, Tamagawa University

2 Software Science Department, Tamagawa University

2A2-3 Estimation of functional brain map of mice based on optical intrinsic imaging and independent component analysis

内因性光イメージングと独立成分分析に基づくマウスの機能的脳地図の推定

Y. Yoshida¹, N. Katayama¹, D. Nakagawa¹, A. Karashima², M. Nakao¹

1 Tohoku University

2 Tohoku Institute of Technology

2A2-4 Rebuilding of sense decrement system based on biofeedback

バイオフィードバックに基づく感覚減衰システムの再構築

Y. Obata¹, T. Nakama², M. Gotou², H. Miyata¹, S. Eotou², Y. Sueyoshi², K.

Yunokuchi², A. Nuruki², T. Yamanoue³, K. Takahashi⁴, M. Hamada⁵, R. Ikeda²

1 Kagoshima University

2 Kagoshima University

3 Fukuyama University

4 Kumamoto higher vocational school

5 Tokyo University

2A3 14:40~16:40

医療をイノベーションするシステム思考

Organizer: Hiroyuki Kurata (Kyushu Institute of Technology)

Session Chair: Hiroyuki Kurata (Kyushu Institute of Technology)

2A3-1 Evaluation of Blood Vessel Health State from Nailfold Micro-Capillary Image Processing -Evaluation of plural blood vessels-

指先微小血管の画像解析による血管健康状態評価の研究 -複数血管評価-

N. Mitsutake¹, D. Yokoyama¹, K. Nagayama¹, I. Miura²

¹ Kyushu Institute of Technology

² Juntendo University

2A3-2 Cancer subtype classification using gene expression data and clinical information-

遺伝子発現データと臨床情報を利用したがんサブタイプ探索

T. Yamazaki¹, A. Kitajima¹, Y. Hosokawa¹, K. Aoyagi², H. Sasaki²

¹ Kyushu Institute of Technology

² Oita National Cancer Center Research Institute

2A3-3 Systems Biology of Body Clocks: Toward a Cancer Therapy Based on a Systems Understanding of Circadian Rhythms

K. Maeda¹, H. Kurata¹

¹ Kyushu Institute of Technology

2A3-4 Impulse-driven Capsule for Medical Treatment

S. Murakami¹, T. Ito¹, T. Hayashi²

¹ Kyushu Institute of Technology

² Ogasawara Precision Laboratory LTD.

Room B Thursday, September 3

第2日目 B会場 9月3日(木)

2B1 10:45~12:00

脳と視知覚

Session Chair: Takeshi Aihara (Tamagawa University)

2B1-1 Effect of delay and preceding visual information on perception and exercise performance of grasping

把持運動課題における視覚情報の時間的な操作が運動と重さ知覚に与える影響

Y. Fujiwara¹, H. Hokazono², A. Maruyama³, K. Yunokuchi², A. Nuruki²

1 Kagoshima University

2 Kagoshima University

3 Niigata University Of Health And Welfare

2B1-2 Effect of object texture on perception and performance grasping

把持運動課題における物体テクスチャが知覚と運動に与える影響

Y. Aoya¹, K. Yunokuchi¹, A. Nuruki¹

1 Kagoshima University

2B1-3 Assessment of visual fatigue caused by flickering lights based on MEG responses

Y. Okamoto¹, S. Nakagawa¹

1 National Institute of Advanced Industrial Science and Technology (AIST)

2B2 13:00~14:30

信号処理・シミュレーション

Session Chairs: Tomohiko Igasaki (Kumamoto University),

Takaaki Ishibashi (National Institute of Technology, Kumamoto college)

- 2B2-1 **A study on sound source tracking based on real-time DOA estimation**
リアルタイム DOA 推定に基づく移動音源追尾に関する検討
N. Iwasaki¹, M. Tamaki¹, S. Fukase¹, K. Inoue², H. Gotanda³
1 National Institute of Technology, Wakayama College
2 Kyushu Institute of Technology
3 Kinki University
- 2B2-2 **Variable arbitrary directional characteristic pattern and its application to two-channel microphone system**
C. Okuma¹, T. Ishibashi¹, K. Hayama¹, H. Gotanda²
1 National Institute of Technology, Kumamoto College
2 Kinki University
- 2B2-3 **Online identification of insulin sensitivity and glyceic control of critically ill patients**
S. Wu¹, E. Furutani¹
1 Kyoto University
- 2B2-4 **Simulation of Vascular Dysfunction Effect on Relationship between Pressure and Diameter**
血管機能障害の圧-径特性に及ぼす影響の シミュレーション解析
Y. Yamazaki^{1,2}, Y. Kamiyama²
1 Aichi Science and Technology Foundation
2 Aichi Prefectural University
- 2B2-5 **Quantifying Geometrical Artifacts in MRI Caused by a Ferromagnetic Metal --- Comparison of Measured Images and Simulated Images ---**
強磁性金属による MRI 幾何学的アーチファクトの定量化
— 実画像とシミュレーション画像の比較 —
T. Tokitani¹, M. Akutagawa², T. Emoto², Y. Kinouchi², S. Konaka²
1 Grad. School of Advanced Tech. and Scie., The Univ. of Tokushima
2 Institute of Tech. and Scie., The Univ. of Tokushima
- 2B2-6 **Study of the joint action in the lifting movement of virtual object using the augmented reality technique**
拡張現実技術を用いた仮想物体の持ち上げ動作における共同行為の研究
T. Nakama¹, K. Yunokuchi¹, A. Nuruki¹
1 Kagoshima University

2B3 14:40~16:40

睡眠工学：睡眠研究における工学的視点の活用

Organizers: Katsuhiro Inoue (Kyushu Institute of Technology),
Takenao Sugi (Saga University)

Session Chairs: Takenao Sugi (Saga University),
Emi Koyama (Kyoto Institute of Technology)

2B3-1 Great myths about REM sleep

レム睡眠にまつわる誤解を解き明かす

M. Takahara¹

¹ Fukushima University

2B3-2 The emotional regulating function of sleep: Emotional mood and event

K. Ogawa¹, E. Otani¹, M. Mori¹

¹ Hiroshima University

2B3-3 Effects of Light Environment on Arousal Level; Comparison by Spectral Distribution

H. Sawai¹, E. Koyama¹

¹ Kyoto Institute of Technology

2B3-4 Knowledge of the analysis tool development that can be used in sleep research

睡眠研究に使える解析ツール開発とは

Noboru Ohki¹

¹ NoruPro Light Systems, Inc.

Room C Thursday, September 3

第2日目 C会場 9月3日(木)

MICT 研究会 10:45~16:35

【併催】電子情報通信学会 ヘルスケア・医療情報通信技術研究専門委員会
(Technical Committee on Healthcare and Medical Information Communication
Technology)

10:45~12:00

MICT-1 医療への ICT の導入進展に伴う問題と対策

花田英輔¹

¹ 佐賀大学

MICT-2 テレビ会議システムを利用した遠隔医療教育への応用

安徳恭彰¹, 工藤孔梨子¹, 波々伯部佳子¹, 胡 旻¹, 中島直樹¹, 清水周次¹

¹ 九州大学

MICT-3 POF を用いた高精度非接触真円度測定法に関する研究

田中佑育¹, 籠橋 慧¹, 畑 かおり¹, 川島 信¹

¹ 中部大学

13:00~14:00

MICT-4 [招待講演]ICT を使った医療連携ネットワークで変わる地域医療！

～ 長崎県@あじさいネット 11 年の取組みとその価値 ～

松本武浩¹

¹ 長崎大学

14:05~14:30

MICT-5 MIMO 伝送を用いた人体間通信の実験評価

平栗¹ 日本工大学健史¹, 横山駿也¹, 西森健太郎², 大田健紘¹, 竹村暢康¹

¹ 日本工大学

² 新潟大学

14:40～15:30

MICT-6 超音波による筋肉の状態の実時間モニタ

吉田 剛¹, 田原麻梨江¹, 中村健太郎¹

¹ 東京工業大学

MICT-7 超音波エコーと筋電位センサを用いた動作モニタ

田原麻梨江¹, 吉田 剛¹, 青柳貴洋¹, 中村健太郎¹

¹ 東京工業大学

15:35～16:35

MICT-8 [招待講演]健康情報学の現状と課題

～ 予測医療による健康リスク制御に向けて ～

中村 亨¹, 山本義春¹

¹ 東京大学

Room A Friday, September 4

第3日目 A会場 9月4日（金）

3A1 10:00~12:00

様々なBCIsとそれらの教育・医療応用1

Organizer: Toshimasa Yamazaki (Kyushu Institute of Technology)

Session Chair: Kiyohisa Natsume (Kyushu Institute of Technology)

**3A1-1 Development of new BCI algorithms using scalp-recorded EEGs-
頭皮脳波を利用した新しいBCIアルゴリズムの展開**

T. Yamazaki¹

1 Kyushu Institute of Technology

**3A1-2 Motor imagery BCI –Relationship between Bereitschaftspotential and EMG–
動作イメージBCI –運動準備電位とEMGの関係–**

H. Nishida¹, N. Toshima¹, K. Matsushita¹, T. Yamazaki¹, J. Ninomiya²

1 Kyushu Institute of Technology

2 Oita National College of Technology

**3A1-3 Silent Speech BCI –Investigation of algorithm parameters-
サイレントスピーチBCI -アルゴリズムを規定するパラメータの検討-**

K. Matsushita¹, S. Hirose¹, T. Ito¹, H. Nishida¹, H. Yamaguchi², T. Yamazaki¹

1 Kyushu Institute of Technology

2 NEC Corporation

3A1-4 Silent Speech BCI –Prediction of Silent Season–

T. Ito¹, H. Yamaguchi³, A. Yamaguchi², T. Yamazaki¹, S. Fukuzumi³, T. Yamanoi⁴

1 Kyushu Institute of Technology

2 Hitachi Systems, Ltd.

3 Knowledge Discovery Research Laboratories, NEC Corp.

4 Hokkai Gakuen University

3A2 14:00~15:30

様々なBCIsとそれらの教育・医療応用2

Organizer: Toshimasa Yamazaki (Kyushu Institute of Technology)

Session Chair: Toshimasa Yamazaki (Kyushu Institute of Technology)

3A2-1 BCI e-Learning system on English rhythm

K. Wada¹, K. Natsume¹

¹ Kyushu Institute of Technology

3A2-2 The control of radio control car using steady-state visual evoked potential

K. Yuzawa¹, K. Natsume¹

¹ Kyushu Institute of Technology

3A2-3 Study of communication supporting device for severely handicapped people with electroencephalograph

M. Nagai¹

¹ National Institute of Technology, Tokyo College

Room B Friday, September 4

第3日目 B会場 9月4日（金）

3B1 10:00~12:00

ウェアラブルモニタ最前線：メタボ対策から介護までの応用

Organizers: Satoru Nebuya (Kitasato University),
Kazuki Nakajima (University of Toyama)

Session Chairs: Satoru Nebuya (Kitasato University),
Kazuki Nakajima (University of Toyama)

3B1-1 Evaluation of a heat stroke preventing air-cooling vest based on the change of deep body temperature

M. Huang¹, T. Yoshimura², Z. Tang³, T. Tamura³, M. Yoshida³, M. Uchida⁴

1 Nara Institute of Science and Technology

2 Tokyo Metropolitan College of Industrial Technology

3 Osaka Electro-Communication University

4 Prop Co., Ltd.

3B1-2 Development of a capacitive sensor for quantitative evaluation of the urine absorption volume of a pad-type diaper

S. Konno¹, J. Kim¹, K. Sekine², K. Nakajima¹

1 University of Toyama

2 Kanazawa University

3B1-3 A wearable shape estimation belt for body shape measurement

S. Nebuya¹, S. Hifumi¹, T. Yamaguchi², M. Katashima², H. Kumagai¹

1 Graduate School of Medical Sciences, Kitasato University

2 Kao Corporation

3B1-4 Development of the Wearable Visceral Fat Measuring device

M. Katashima¹, T. Yamaguchi¹, S. Nebuya²

1 Kao Corporation

2 Kitasoto University

3B2 14:00~15:15

運動

Session Chair: Atsuo Nuruki (Kagoshima University)

3B2-1 Comparison of sensory attenuation of lower limbs in athletes and non-athletes

アスリートと非アスリートにおける下肢の感覚の減衰の比較

S. Hirata¹, A. Maruyama², K. Yunokuchi¹, A. Nuruki¹

¹ Kagoshima University

² Niigata University of Health and Welfare

3B2-2 Effects of Cooling Tights on Muscle Temperature and Energy Consumption during Running

K. Honjyo¹, Y. Sakaue¹, C. Soukawa², M. Makikawa³

¹ Graduate school of Science and Engineering, Ritsumeikan University

² Research and Development Division, Okamoto Corporation

³ College of Science and Engineering, Ritsumeikan University

3B2-3 Subject-specific hip geometry affects the relationship between three dimensional muscle-tendon lengths of hip flexor muscles and hip joint angles

T. Kurihara¹, T. Jiroumaru^{1,2}, T. Isaka¹

¹ Ritsumeikan University

² Shiga School of Medical Technology

3B2-4 A simple device for response time measurement of patellar tendon reflex by using gyro sensors and microcontroller

M. Motoki¹, H. Shintani¹, T. Ishibashi¹, K. Hayama¹, H. Koga²

¹ National Institute of Technology, Kumamoto College

² Kumamoto Health Science University

Room C Friday, September 4

第3日目 C会場 9月4日（金）

3C1 10:00~11:30

福祉工学 2

Session Chairs: Hisao Oka (Okayama University),

Hidetoshi Nagai (Kyushu Institute of Technology)

- 3C1-1 Development of Switching System for Action Mode of Upper Limb Prosthesis Using Shoulder's EMG Signal**
Y. Yano¹, D. Wakabayashi²
1 National Institute of Technology, Nara College
2 University of Fukui
- 3C1-2 Continuous Inaudible Vowels Recognition based on Features of Surface EMG at Candidates for Peaks of Lip Shape**
N. Kurogi¹, H. Nagai¹, T. Nakamura¹
1 Kyushu Institute of Technology
- 3C1-3 Computational Complexity in Continuous Estimation of Muscular Activity based on Redundant Wavelet Coefficients of Surface EMG**
H. Nagai¹
1 Kyushu Institute of Technology
- 3C1-4 Assessment of swallowing function using surface electromyography and mechanomyography**
Y. Itoh¹, Y. Urata², S. Fujiwara², M. Yasubayashi³, K. Kubo⁴, K. Akataki⁵, K. Mita⁴
1 Institute for Developmental Research, Aichi Human Service Center
2 Asahi University
3 Chubu University
4 Seijoh University
5 Osaka Electro-Communication University
- 3C1-5 RISE and Neural Network-based Control for Human Lower Limb by using NMES**
Y. Kawai¹, K. Ejiri¹
1 National Institute of Technology, Ishikawa College
- 3C1-6 Development of MMG / EMG hybrid transducer for muscle contraction evaluation**
S. Fukuhara^{1,2}, H. Oka¹
1 Okayama University
2 Kawasaki University of Medical Welfare

3C2 14:00~15:15

自律系解析

Session Chair: Yuki Hayashida (Osaka University)

3C2-1 Effect of inhalation of different concentrations of grapefruit essential oil on cardiorespiratory function

E. Kawai¹, H. Nakahara¹, S. Ueda¹, T. Miyamoto¹

¹ Graduate School of Health Sciences, Morinomiya University of Medical Sciences

3C2-2 Automatic detection of heart rate and respiratory rate during sleep and its relation to sleep stage

Y. Saito¹, T. Ikenoue¹, T. Sugi¹, Y. Matsuda¹, S. Goto¹, T. Kogure², S. Shairakawa³

¹ Saga University

² Paramount Bed CO.,LTD

³ Sleep Assessment & Research Institute

3C2-3 Examination of heartbeat-respiratory interval measurement by piezoelectric sensors and independent component analysis

複数の圧電センサと独立成分分析による心拍・呼吸間隔測定の検討

S. Shimai¹, T. Igasaki¹, N. Murayama¹, M. Kobayashi¹

¹ Kumamoto University

3C2-4 Examination of automatic eyeblink detection by horizontal-vertical electrooculograms under driving environment

T. Igasaki¹, H. Nishiyama¹, N. Murayama¹, Z. Hu¹

¹ Kumamoto University