2013 International Winter Workshop on Brain-Computer Interface

(BCI 2013)

Gangwon Province, South Korea 18-20 February 2013



IEEE Catalog Number:

ISBN:

CFP13BCI-PRT 978-1-4673-5973-3

Table of Contents

Invited Speakers

1	Tutorial on Multimodal Neuroimaging for Brain-Computer Interfacing Siamac Fazli (Berlin Institute of Technology, Germany)	1
2	Bayesian Common Spatial Patterns Seungjin Choi (POSTECH, Korea)	3
3	Brain-Computer Interface for Stroke Rehabilitation with Clinical Studies Cuntai Guan (A*STAR, Singapore)	4
4	Mobile Real-time EEG Imaging Lars Kai Hansen (Technical University of Denmark, Denmark)	6
5	Neuro-Driving: Automatic Perception Technique for Upcoming Emergency Situations Seong-Whan Lee (Korea University, Korea)	8
6	Spatial Projections of Neural Arrays Lucas Parra (City College of New York, USA)	10
7	Divergence Estimation for Machine Learning and Signal Processing Masashi Sugiyama (Tokyo Tech, Japan)	12
8	Progress Toward a High-performance Neural Prosthetic Andrew Schwartz (University of Pittsburgh, USA)	14
9	Decoding Cognitive Brain States Klaus-Robert Müller (Berlin Institute of Technology, Germany)	16
10	EEG/Sonication-based Brain-Brain Interfacing Byoung-Kyong Min (Korea University, Korea)	19
11	Japanese SRPBS BMI Project Mitsuo Kawato (ATR, Japan)	21

Poster Session

12	A Bayesian Approach for Spatio-Spectral Filter Optimization in BCI Heung-Il Suk, Seong-Whan Lee	22
13	A Novel P300-Based BCI System for Words Typing Faraz Akram, Mohamed K. Metwally, Hee-Sok Han, Hyun-Jae Jeon, Tae-Seong Kim	24
14	A Novel Spatial Filtering Method for EEG-based Brain-Computer Interfaces Tae-Eui Kam, Heung-Il Suk, Seong-Whan Lee	26
15	A Novel Tactile Stimulation System for BCI Feedback Kiuk Gwak, Robert Leeb, José del R. Millán, Dae-Shik Kim	29
16	A Study on Information Transfer Rate by Brain-Computer Interface (BCI) using Functional Near-Infrared Spectroscopy (fNIRS) Jaeyoung Shin, Jihyun Kim, Sungyong Kang, Minkyu Sung, Joohwan Kim, Yongjung Kim, Jichai Jeong	32
17	BMFLC with Neural Network and DE for Better Event Classification Yubo Wang, Venkateswarlu Gonuguntla, Ghufran Shafiq, Kalyana C. Veluvolu	34
18	Classifying ECoG Signals Prior to Voluntary Movement Onset Sang Hun Lee, Kyungin Choi, Sehyoon Jeong, June Sic Kim, Chun Kee Chung	36
19	Common Spatial Patterns based on Generalized Norms Jangwoo Park, Wonzoo Chung	39
20	Decoding Three-Dimensional Arm Movements for Brain-Machine Interface Hong Gi Yeom, June Sic Kim, Chun Kee Chung	43
21	Design of a Robotic Wheelchair with a Motor Imagery based Brain-Computer Interface Keun-Tae Kim, Tom Carlson, Seong-Whan Lee	46
22	Detection of Multi-Class Emergency Situations during Simulated Driving from ERP II-Hwa Kim, Jeong-Woo Kim, Stefan Haufe, Seong-Whan Lee	49

23	Dry Electrode Design and Performance Evaluation for EEG based BCI systems Seungchan Lee, Younghak Shin, Soogil Woo, Kiseon Kim, Heung-No Lee	52
24	EEG Asymmetry and Anxiety Hye-Ryeon Yang, Ji-Eun Park, Sangsup Choi, Jin-Hun Sohn, Jong-Min Lee	54
25	EEG-based Emotion Recogntion during Emotionally Evocative Films Mi-Sook Park, Hyeong-Seok Oh, Hoyeon Jeong, Jin-Hun Sohn	56
26	EEG-based Person Authentication using Face Stimuli Seul-Ki Yeom, Heung-Il Suk, Seong-Whan Lee	58
27	Effects of Rest Frames on Cybersickness and Oscillatory Brain Activity EunHee Chang, InJae Hwang, Hyeonjin Jeon, YeSeul Chun, Changhoon Park, Hyun Taek Kim	62
28	Efficient Edge Detection Method for Anatomic Feature Extraction for Neuro-Sensory Tissue Image Based on Optical Coherence Tomography Yeong-Mun Cha, Jae-Ho Han	65
29	Emotion Classification in Movie Clips based on 3D Fuzzy GIST and EEG Signal Analysis Mingu Kwon, Jun-Su Kang, Minho Lee	67
30	Estimation on the development of cerebral edema from computed tomography Hak-seung Kim, Young-Tak Kim, Dong-Joo Kim	69
31	Ethical and Social Issues Behind Brain-Computer Interface Kyeong-Yeon Lee, Dayk Jang	72
32	Evaluation of Feature Extraction Methods for Motor Imagery-based BCIs in Terms of Robustness to Slight Changes of Electrode Locations Han-Jeong Hwang, Chang-Hwan Im, Sun-Ae Park	76
33	'Eyes-closed' SSVEP-based BCI for Binary Communication of Individuals with Impaired Oculomotor Function Jeong-Hwan Lim, Han-Jeong Hwang, Chang-Hwan Im	79
34	Implementation of a Mental Spelling System based on Steady-State Visual Evoked Potential (SSVEP) Han-Jeong Hwang, Jeong-Hwan Lim, Jun-Hak Lee, Chang-Hwan Im	81

35	Learning Markov Random Field Image Prior for Pixelation Removal of Fiber Microscopy using Sparse Coding Based on Bayesian Framework Cheon-Yang Lee, Jae-Ho Han	84
36	Modified Pattern-Reversal Visual Checkerboard Stimuli with Dual Alternating Frequencies for Multi-Class SSVEP-based Brain-Computer Interfaces Chang-Hee Han, Han-Jeong Hwang, Chang-Hwan Im	86
37	Motor Trajectory Decoding based on fMRI-based BCI - a Simulation Study Seungkyu Nam, Kyung Hwan Kim, Dae-Shik Kim	89
38	Multimodal Imaging Technique for Rapid Response Brain-Computer Interface Feedback Seul-Ki Yeom, Siamac Fazli, Jan Mehnert, Benjamin Blankertz, Jens Steinbrink, Klaus-Robert Müller, Seong-Whan Lee	92
39	Optimal Channel Selection based on Statistical Analysis in High Dimensional NIRS Data Min-Ho Lee, Seong-Whan Lee, Siamac Fazli	95
40	P300 Speller using a New Stimulus Presentation Paradigm Jin-Sup Eom, Hye-Ryeon Yang, Mi-Sook Park, Jin-Hun Sohn	98
41	Power Consumption of Wireless EEG Device for BCI Application Hoyeoul Park, Boram Myung, Sunkyoo Yoo	100
42	The Beginning of Neurohaptics: Controlling Cognitive Interaction via Brain Haptic Interface Jinung An, Seung Hyun Lee, Sang Hyeon Jin, Berdakh Abibullaev, Gwanghee Jang, Jaehyun Ahn, Hyunju Lee, Jeon-Il Moon	103
43	The Effectiveness of Epidural ECoG on Brain Computer Interface in Primate Jeyeon Lee, Hosuk Choi, Taekyung Kim, Hojong Lee, In Young Kim, Sun I. Kim, Dong Pyo Jang, SunKyue Kim, JeongEun Lee, Kyung-Ha Ahn, Kyoung-Min Lee	107
44	Three-Dimensional Upper Limb Movement Decoding from EEG Signals Jeong-Hun Kim, Ricardo Chavarriaga, José del R. Millán, Seong-Whan Lee	109
45	Author Index	112