Life Engineering Symposium 2019

PROGRAM

Schedule

Day 1 Aug. 23rd (Fri.)						
	Room A		Room B		Room C	
p.m.	Keynote lecture 1 Jackrit Suthakorn					
	1A1	BME, starting again from Manufacturing (OS)	1B1	EEG 1	1C1	Sensor 1
	1A2	System and Model	1B2	EEG 2	1C2	Student Award session
	Keynote lecture 2 S. Chumnanvej					

Day 2 Aug 24th (Sat.)						
	Room A		Room B		Room C	
a.m.	2A1	Sensor 2	2B1	Motor function & Muscle 1		
	2A2	Neural Engineering (OS)	2B2	Motor function & Muscle 2	2C1	Imaging & Optic
p.m.	Keynote lecture 3 Jan Lauwereyns					
	2A3	Functional NIRS (OS)	2B3	Sensor 3		
	2A4	Bioinstrumentation for Ubiquitous Healthcare (OS)	2B4	ECG		
	Keynote lecture 4 Janekrishna Kanatharana					

Day 3 Aug. 25th (Sun.)				
	Room A		Room B	
a.m.	3A1	Life Engineering of the Toilet (OS)	3B1	Motor function & Muscle 3
	3A2	Muscle and skeletal system/Motor function (OS)	3B2	EEG 3

Keynote lecture 1

Day 1	12:45-13:45 Friday, August 23
Presenter	Jackrit Suthakorn (Mahidol University)
Title	Toward Medical Robotics Industry: A New Era for Medical Treatment
Chair	Kazuki Nakajima (Toyama University)

Keynote lecture 2

Day 1	17:30-18:00 Friday, August 23
Presenter	S. Chumnanvej (Neurosurgery Division, Surgery Department, Faculty of Medicine Ramathibodi Hospital, Mahidol University)
Title	Robot-assisted endonasal endoscopic transsphenoid surgery
Chair	Yodchanan Wongsawat (Mahidol University)

Keynote lecture 3

Day 2	13:30-14:00 Saturday, August 24
Presenter	Jan Lauwereyns (Kyushu University)
Title	Perspectives from Cognitive Science on Bioethics and Biomedical Engineering
Chair	Keiji Iramina (Kyushu University)

Keynote lecture 4

Day 2	18:00-18:30 Saturday, August 24
Presenter	Janekrishna Kanatharana (EECi Director and Executive Vice President of NSTDA)
Title	Translational Research Opportunity in Eastern Economic Corridor of Innovation (EECi)
Chair	Yodchanan Wongsawat (Mahidol University)

General Session

Room A Day 1 Friday, August 23

1A1 13:15 – 15:15
OS 1: BME, starting again from Manufacturing
Organizer: Tsuruo Matsuda (Kitakyushu Univercity)
Chair: Tsuruo Matsuda (Kitakyushu Univercity)

1A1-1 **Challenge to sawing skill evaluation using the three-axis acceleration sensor**

Tomohiko Igasaki [1], Koki Matsuura [1], Akito Koga [1], Kazuharu Hashitsume [2]
1 Kumamoto University, Japan,
2 Shimane University, Japan

1A1-2 **Development of the non-invasive hand 3D measurement system contributing to higher brain dysfunction, and integrated control environment for pneumatic controlled glove for rehabilitation assistant.**

Junya Kaneda [1], Satoshi Takahashi [2], Tsuruo Matsuda [1]
1 Kitakyushu Univercity, Japan,
2 Ryowa Co., Ltd., Japan

1A1-3 **Research and development of force limit system using post-buckling characteristics of tape shaped shape memory alloy**

Takumi Ishii [1], Hiroki Cho [2]
1 Graduate student of the University of Kitakyushu, Japan
2 The University of Kitakyushu, Japan

1A1-4 **Effects of installed number of warp-direction alumite wire on operating characteristics of weft yarn-type shape memory actuator**

Kohei Saka [1], Naoki Ueno [1], Hiroki Cho [2]

1 Graduate student of the University of Kitakyushu, Japan

2 The University of Kitakyushu, Japan

1A1-5 **Toward the development of a sitting position training system**

Takamichi Yotsumoto [1], keiichi Hiroshige [1], Atsushi Inomoto [1],

Masako, Fuchi [1], Seiichiro, Takahashi [1]

1 Kyushu Nutrition Welfare University

1A1-6 **A vital sign monitoring system with heatstroke prediction sensor in overload exercise**

Ryosuke Sakai [1], Shigetoshi Nakatake [1], Tsuruo Matsuda [1]

1 The University of Kitakyushu, Japan

1A2 15:30 – 17:30
General Session: System and Model
Chairs: Ken Kiyono (Kitakyushu Univercity),
P. Temrat (King Mongkut's University of Technology Thonburi)

1A2-1 **Long-range auto- and cross-correlation analysis of non-stationary biosignal time series**

Akio Nakata [1], Itsuki Shiga [1], Miki Kaneko [1], Taiki Shigematsu [1]
Ken, Kiyono [1]
1 Osaka University, Japan

1A2-2 **A numerical calculation of photonic crystal by employing Green's function method**

Chiang Yan-Ju [1], Wu Cheng-Hsi [1]
1 Oriental Institute of Technology, Taiwan

1A2-3 **Training Pill Detection Model Using Synthetic Data Generation**

C. Songsaksuppachok [1], P. Ritthipravat [1]
1 Mahidol University, Thailand

1A2-4 **A Study of Two-class OSA Classification Based on Artificial Neural Networks**

P. Temrat [1], Y. Jiraraksopakun, A. Bhatranand, K. Wea-asae
1 King Mongkut's University of Technology Thonburi,
2 Prince of Songkla University

1A2-5 **Automated Generation of Synthetic Time-Lapse Image Sequences of Living Cells**

Zaw Htet Aung [1], P. Kanchanapiboon [1], P.Ritthipravat [1]
1 Mahidol University, Thailand

1A2-6 **Viscoelastic eyeball behavior in vertical saccadic eye movement**

Takehito Hayami [1], Takashi Matsuo [2], Kyosuke Fukuda [3],
Kazunori Shidoji [4]

1 Okayama University, Japan

2 The University of Kitakyushu, Japan

3 Fukuoka Prefectural University, Japan

4 Kyushu University, Japan

Room B Day 1 Friday, August 23

1B1 13:15 – 15:15
General Session: EEG 1
Chairs: Takenao Sugi (Saga University),
Watchara Sroykham (Mahidol University)

1B1-1 **Cortical Potential Propagation as Integration of Sensory Memory**

Gennosuke Tasaka [1], Takeshi Aihara [1]
1 Tamagawa University, Japan

1B1-2 **Brain modulation via binaural beat**

Nantawachara Jirakittayakorn [1], Yodchanan Wongsawat
1 Faculty of Dentistry, Mahidol University, Thailand

1B1-3 **An Analysis of Photic Driving EEG Evoked with Sets of Color Flashes from the Glasses Having the Luminous Function**

Tanaka Shu [1, 2], Hayami Takehito [1], Wongsawat Yodchanan [3],
Tiawongsuwan Lattika [3], Yamada Kenji [4], Ikuta Koji [6], Iramina Keiji [2]
1 Okayama University, Japan
2 Kyushu University, Japan
3 Mahidol University, Thailand,
4 Osaka University, Japan,
5 University of Tokyo, Japan

1B1-4 **Visual Field Defect Classification**

Parisa Wu [1], Nattadet ChinThanaThatset [1], Soontorn Oraintara [1]
1 Mahidol University, Thailand

1B1-5 **The effect of the combined working memory and fm theta neurofeedback training for attention and working memory**

Hiroto Takeuchi [1], Keiji Iramina [1]
1 Kyushu University, Japan

1B1-6 **The relationship between EEG and homone**

Watchara Sroykham [1], Yodchanan Wongsawat [1]

Mahidol University, Thailand

1B2 15:30 – 17:30
General Session: EEG 1
Chairs: Tomohiko Igasaki (Kumamoto University),
T. Angsuwatanakul (Rangsit University)

1B2-1 **The effect of background music on attention at different difficulty levels of video game**

Van Le Thi Cam [1], Ayumi Tahara [1], Nonthaporn Nakphu [1], Keiji Iramina [1]
1 Kyushu University, Japan

1B2-2 **Feature Extraction of Fundamental EEG Activity for Developing Screening System using Wearable EEG Device**

Ryo Inoue [1], Takenao Sugi [1], Yoshitaka Matsuda [1], Satoru Goto [1],
Haruhiko Nohira [2], Ryuzo Mase [2]
1 Saga University, Japan
2 Nihon Kohden Corporation, Japan

1B2-3 **Analysis of Brain Activity for Preference Tasks Using EEG Signals**

Thanate Angsuwatanakul [1], Wipavee Jung-in [1], Kittiya A-lad [1],
Manas Sangworasil [1]
1 Rangsit University, Thailand

1B2-4 **Case Study: Autism Spectrum Disorder's Unique Brain Activity During Mental Arithmetic**

Shota Hatano [1], Sho Ageno [1], Lattika Tiawongsuwan [2],
Sansit Ngamrassameewong [2], Yodchanan Wongsawat [2], Keiji Iramina [1]
1 Kyushu University, Japan
2 Mahidol University, Thailand

1B2-5 **Impactful Empathetic Design for People with Dementia**

Sittha Sukkasi [1], Sarawut Lerspalungsanti [1]
1 Design and Industry Solutions Research Team, MTEC, NSTDA

1B2-6

Automatic detection of spikes and periodic discharges in continuous EEGs in ICU: comparison with experts' visual inspection

Yuki Asayama [1], Takenao Sugi [1], Yositaka Matsuda [1], Satoru Goto [1],
Haruhiko Nohira [2], Ryuzo Mase [2], Yuichi Kubota [3, 4]

1 Saga University, Japan

2 Nihon Kohden Corporation, Japan

3 TMG Asaka Medical Center, Japan

4 Tokyo Wemen's Medical University, Japan

Room C Day 1 Friday, August 23

1C1 13:15 – 15:15
General session: Sensor 1
Chairs: Hiroyuki Kudo (Meiji University),
Norased Nasongkla (Mahidol University)

1C1-1 **Development of Estimation System for Diaper Absorption Volume Using Capacitance Change**

Sota Tanaka [1], Shujiro Konno [1], Juhyon Kim [1], Kazuki Nakajima [1]
1 University of Toyama, Japan

1C1-2 **The reduction of burst chlorhexidine-release on coated Foley urinary catheter by biodegradable polymers: PLA and PCL**

Siriwan Srisang [1], Norased Nasongkla [1]
1 Mahidol University, Thailand

1C1-3 **Measurement of Defecation and Urination by A Gas Sensor Placed Under The Toilet Seat**

Takumi Kamimura [1], Daisuke Inoue [1], Yoshio Kanayama [1, 2], Juhyon Kim [1], Kazuki Nakajima [1]
1 University of Toyama, Japan,
2 NEC Solution Innovators, Ltd., Japan

1C1-4 **Study on the Effect of Daily Activities on Salvary Uric Acid Determination**

Haruna Saito [1], Yuki Ikemoto [1], Kenichi Nomura [2], Tomoya Koshi [2], Yoshinori Horii [2], Manabu Yoshida [2], Hiroyuki Kudo [1]
1 Meiji University, Japan
2 National Institute of Advanced Industrial Science and Technology, Japan

1C1-5 **Boronic Acid Functionalized Guided Mode Resonance Sensor for HbA1c Detection**

P Chamras Promptmas [1], Boonrasri Seeleang [1], Songpol Ongwattanakul [1], Sakoolkan Boonruang [1], Waleed S. Mohammed [1], Romuald Jolivot [1]

1 Mahidol University, Thailand

1C1-6 **Comparative studies of Formulation and Preparation methods of Bovine Serum Albumin-Loaded Niosome**

Norased Nasongkla [1], Komgrit Eawsakul [1]

1 Mahidol University, Thailand

1C2 15:30 – 17:30
LE2019 Student Award Session
Chairs: Naruhiro Shiozawa (Ritsumeikan University),
Akinori Ueno (Tokyo Deniki University)

1C2-1 **Concurrent theta activity in intuitive understanding during an arithmetic task**

Akira Okuwa [1], Arao Funase [1], Hironori Nakatani [2], Ichi Takumi [1]
1 Nagoya Institute of Technology, Nagoya, Japan
2 Tokai University, Tokyo, Japan

1C2-2 **Investigation of EEG-DMN using Phase Locking Value**

Sho Ageno [1], Shota Hatano [1], Keiji Iramina [1]
1 Kyushu University, Japan

1C2-3 **Activation in Somatosensory Cortex during Object Recognition Procedure**

Zhaoxuan Li [1], De Bi [1], Wanqin Ma [1], Keiji Iramina [1]
1 Kyushu University, Japan

1C2-4 **Proposal of health index with Autonomic nervous system activity using RGB Video Images**

Yu Ochiai [1], Shima Okada [2], Jeong Hieyong [3], Yuko Ohno [3],
Masaaki Makikawa [2]
1 Ritsumeikan University, Graduate School of Science and Engineering, Japan
2 Ritsumeikan University, Japan
3 Osaka University, Japan

1C2-5 **Involvement of GABAergic transmission in the nucleus accumbens related to the cue-selection behavior with a waiting period**

Masaki Okubo [1], Kosuke Mastuzaki [1], Naoko Okada [1], Yutaka Komura [2], Riichi Kajiwara [1]

1 Meiji University, Japan

2 Kyoto University, Japan

1C2-6 **New mechanical surface processing for bearing part in artificial joint to reduce macrophage activation**

Haruki Miyamoto [1], Nana Motojima [1], Yukio Fujiwara [1], Yuta Nakashima [1], Yoshitaka Nakanishi [1]

1 Kumamoto University, Japan

RoomA Day 2 Saturday, August 24

2A1 8:30 – 10:10
General Session: Sensor 2
Chairs: Nobuo Watanabe (Shibaura Institute of Technology),
Benchaporn Lertanantawong (Mahidol University)

2A1-1 **Nasal temperature: a new approach for continuous and noninvasive psychological status monitoring during acupuncture**

Tianyi Wang [1], Hieyong Jeong [1], Shima Okada [2], Yuko Ohno [3]
1 Department of Robotics & Design for Innovative Healthcare, Graduate School of Medicine, Osaka University, Japan,
2 Department of Robotics, College of Science and Engineering, Ritsumeikan University, Japan
3 Department of Mathematical Health Science, Graduate School of Medicine, Osaka University, Japan

2A1-2 **Evaluation of Basic Characteristics of A Non-contact Thermal Uroflowmeter**

Shunsuke Ikegami [1], Takumi Kamimura [1], Yoshio Kanayama [1, 2],
Juhyon Kim [1], Hiroshi Kitamura [1], Kazuki Nakajima [1]
1 University of Toyama, Japan
2 NEC Solution Innovators, Ltd., Japan

2A1-3 **Color measurement on tissue with wearable device aimed for postoperative blood flow monitoring**

Koichi Kida [1], Jian Gu [1], Yuki Sunaga [1], Itsuro Saito [2], Yoko Tomioka [3],
Mutsumi Okazaki [3], Takao Someya [1], Masaki Sekino [1]
1 Graduate School of Engineering, University of Tokyo, Japan
2 Department of Biomedical Engineering, University of Tokyo, Japan
3 Department of Plastic and Reconstructive Surgery, University of Tokyo, Japan

2A1-4 **A Comparative Performance Between Molecularly Imprinted Polymer and Antibodies for Homocysteinein the Electrochemical Biosensor**

Unchalee Kongintr [1], Chamras Promptmas [1], Benchaporn Lertanantawong [1]

1 Mahidol University, Thailand

2A1-5 **Electrochemical Synthesis of GaOOH Nanoparticles from Liquid Metals**

Benchaporn Lertanantawong [1], Panjaphong Lertsathitphong ,

Jamie D. Riches , Anthony O'Mullane

1 Mahidol University, Thailand

2 King Mongkut's University of Technology Thonburi, Thailand

3 Queensland University of Technology, Thailand

2A2 10:30 – 12:30
OS 2: Neural Engineering
Organizer: Arao Funase (Nagoya Institute of Technology)
Chairs: Theerawit Wilaiprasitporn (Vidyasirimedhi Institute of Science and Technology),
Arao Funase (Nagoya Institute of Technology)

Abstract:
Neural Engineering researches are a bridge between neuroscience field and engineering feild. In this session, introducing various resaerches related to this topic, we would like to discuss the future Neural Eigineering and its application.

2A2-1 **Concurrent theta activity in intuitive understanding during an arithmetic task**

Akira Okuwa [1], Arao Funase [1], Hironori Nakatani [2], Ichi Takumi [1]
1 Nagoya Institute of Technology, Nagoya, Japan
2 Tokai University, Tokyo, Japan

2A2-2 **Translingual Neurostimulation Device**

Pisitpong Wongtha [1], Ariya Suthisophaarporn [1], Kitchanan Asavatamrat [1], Yodchanan Wongsawat [1]
1 Mahidol University, Thailand

2A2-3 **EEG Time-Frequency Comparison of Standing and Sitting Motor Imagery**

Rattanaphon, Chaisaen [1], Narin, Kunaseth [1], Pitshaporn, Leelaarporn [1], Apiwat, Ditthapron [1], Kanyarat, Boonkham [1], Theerawit, Wilaiprasitporn [1]
1 BRAIN, Vidyasirimedhi Institute of Science and Technology, Thailand

2A2-4 **EMG Time-Frequency Comparison of Standing and Attempting to stand tasks**

Kanyarat, Boonkham [1], Apiwat, Ditthapron [1], Rattanaphon, Chaisaen [1], Narin, Kunaseth [1], Pitshaporn, Leelaarporn [1], Theerawit, Wilaiprasitporn [1]
1 BRAIN, Vidyasirimedhi Institute of Science and Technology, Thailand

2A2-5 **Integrated information in neural network**

Takeru Kimura [1], Masafumi Oizumi [1], Jun Kitazono [1], Yuichiro Yada [1], Hirokazu Takahashi [1]

1 The University of Tokyo, Japan

2A2-6 **Development of artificial gap junction for stimulating neural systems**

T. Yagi [1], Y. Miyamoto [1], K. Shimba [2], Z. Peng [1], H. Miyata [1], S. Jeon [1], G. Rix [1], T. Kawano [1], K. Wada [1], S. Kanno [1], Y. Kirihara [1]

1 Tokyo Institute of Technology,

2 The University of Tokyo

2A3 14:00 – 15:20
OS 3: Functional NIRS
Organizer: Hideo Eda (The Graduate School for the Creation of New Photonics Industries)
Chair: Hideo Eda (The Graduate School for the Creation of New Photonics Industries)

2A3-1 **Measuring Brain Activity for Preference Tasks Using fNIRS**

Thanate Angsuwatanakul [1] , Wipavee Jung-In [1], Kittiya A-lad [1], Takenobu Matsuura [1]

1 Rangsit University

2A3-2 **Contribution of prefrontal cortex to attention conflicts in dual memory tasks**

Ruimin Wang [1], Iramina Keiji [1, 2]

1 Graduate School of Systems Life Sciences, Kyushu University, Japan

2 Informatics Faculty of Information Science and Electrical Engineering, Kyushu University, Japan

2A3-3 **NIRS data comparison using the standardized phantom**

Y.Tanikawa [1], E.Okada [2], Y.Yamada [3], H.Eda [4]

1 National Institute of Advanced Industrial Science and Technology, Japan
2 Keio University, Japan
3 The University of Electro-Communications, Japan
4 The Graduate School for the Creation of New Photonics Industries, Japan

2A3-4 **The transition of optics instruments for fNIRS and fMRI**

K.Kiyohara [1], H.Eda [2]

1 Kiyohara Optics Inc., Japan

2 The Graduate School for the Creation of New Photonics Industries, Japan

2A4 16:00 – 18:00
OS 4: Bioinstrumentation for Ubiquitous Healthcare
Organizer: Akinori Ueno (Tokyo Deniki University)
Chair: Akinori Ueno (Tokyo Deniki University)

2A4-1 **Analysis of Pupil Fluctuations as Stress Evaluation Method**

Ayako Katoh [1], Toshiyuki Yaguchi [2]
1 Saitama Medical University, Japan
2 Tokyo Denki University, Japan

2A4-2 **Inter-scorer reliability in manual scoring of sleep stages on single-channel EEG**

Tatsuro Fujie [1], Yukari Tamamoto [2], Hideo Nakamura [2], Koichi Umimoto [2]
1 Morinomiya University of Medical Sciences, Japan
2 Osaka Electro-Communication University, Japan

2A4-3 **Respiration and heartbeat measurement using capacitive electrode with resonant drive system**

Morio Iwai [1], Koichiro Kobayashi [1], Naoki Honma [1], Atushi Satou [2]
1 Iwate University, Japan
2 EQUOS RESEARCH Co., Ltd., Japan

2A4-4 **Non-contact multi-vital in-bed measurements for nocturnal healthcare**

Akinori Ueno [1]
1 Tokyo Deniki University, Japan

2A4-5 **Development of wearable-type of multi channel wireless measuring system for EMG through cloth**

Akihiko Tsukahara [1], Yutaro Yokoo [1], Keita Tanaka [1], Yoshinori Uchikawa [1]
1 Tokyo Denki University, Japan

2A4-6 **TeleMed Robot for Remotely Diagnosis**

Korn Borvorntanajanya [1], Jackrit Suthakorn [1]
1 Mahidol University, Thailand

Room B Day 2 Saturday, August 24

2B1 8:30 – 10:10
General Session: Motor function & Muscle 1
Chairs: Shima Okada (Ritsumeikan University),
Warakorn Charoensuk (Mahidol University)

2B1-1 **Motion Intent prediction for sit-to-stand assist by measurement of lower limb EMG**

Asuka Murakami [1], Shima Okada [2], Masaaki Makikawa [2]
1 The Graduate school of Ritsumeikn University, Japan
2 Ritsumeikan University, Japan

2B1-2 **Human body fall behavior of based wearable measuring**

Huang Shiannfong [1], Chen Yan-Cheng [2], Lai Tzu-Hsien [3]
1 Oriental Institute of Technology, Taiwan
2 National Taiwan Normal University, Taiwan
3 Far Eastern Memorial Hospital, Taiwan

2B1-3 **The difference of postural control mechanism between normal weight and overweight groups: a study on the plantar force in three regions of foot**

Thunaynoot Prasertsakul [1], Warakorn Charoensuk [1]
1 Mahidol University, Thailand

2B1-4 **A Review of Methods of Cervical Spine Range of Motion Measurement**

Kittisak Chotikkakamthorn [1], Panrasee Ritthipravat [1]
1 Mahidol University, Thailand

2B1-5 **SMART Alarming Insole System**

Udomporn Manupibul [1], Warakorn Charoensuk [1]
1 Mahidol University, Thailand

2B2 10:30 – 12:30
General Session: Motor function & Muscle 2
Chairs: Naruhiro Shiozawa (Ritsumeikan University),
Pornchai Phukpattaranont (Prince of Songkla University)

2B2-1 **Observer Based Force Control for Surgical tool Insertion**

Branesh M. Pillai [1], Jackrit Suthakorn [1]
1 Mahidol University, Thailand

2B2-2 **Investigation of the relation between muscle activity and motor imagery based on the muscle contraction types**

Nyi Nyi Tun [1], Keiji Iramina [1]
1 Kyushu University, Japan

2B2-3 **Trial-to-trial peak-force variability is associated with muscle activity pattern during repeated maximal plantar flexions**

Chinami Taki [1], Naruhiro Shiozawa [1], Tetsuya Kimura [2]
1 Ritsumeikan University, Japan
2 Kobe University, Japan

2B2-4 **Recognition of EMG from finger movements for robotic hand control**

Pornchai Phukpattaranont [1]
1 Prince of Songkla University, Thailand

2B2-5 **Proposal of an Integrated Muscle Relaxation Index in General Anesthesia**

Shitong Yuan [1], Masateru Tanimoto [2], Eiko Furutani [3], Toshihiro Takeda [4], Tomomichi Sugawara [4], Kenji Kuroda [4], Gotaro Shirakami [4]
1 Kyoto University, Japan
2 Sony Japan
3 University of Hyogo, Japan
4 Kagawa University, Japan

2B2-6 **Rehabilitation in facial palsy**

Ratanapat Chanubol [1]

1 Prasat Neurological Institute, Thailand

2B3 14:00 – 15:40
General Session: Sensor 3
Chairs: Masaki Sekino (The University of Tokyo),
Yunyong Punsawad (Silpakorn University)

2B3-1 **Real-time Sweat Lactate Monitoring System Embedded on an Armband for Evaluation of Exercise Intensity**

Sakae Konno [1], Masanobu Suzuki [1], Yusuke Suzuki [1], Hiroyuki Kudo [1]
1 Meiji University, Japan

2B3-2 **A MEMS Approachto Intracranial Pressure Monitoring**

Preedipat Sattayasoonthorn [1], Jackrit Suthakorn [1], Sorayouth Chamnanvej [1]
1 Mahidol University, Thailand

2B3-3 **Flexible sensor array for monitoring physiological signals**

Masaki Sekino [1], Jain Gu [1], Koichi Kida [1], Yuki Sunaga [1], Yoko Tomioka [1], Mutsumi Okazaki [1], Itsuro Saito [2], Takao Someya [1]
1 The University of Tokyo, Japan
2 iMed Japan, Japan

2B3-4 **Synthesis of Poly(L-lysine) for the Fabrication of PICsome**

P. Chinavinijkul [1], N.Nasongkla [1]
1 Mahidol University, Thailand

2B3-5 **Synthesis and Purification of Technetium-99m Labeled Polymeric Micelles for Cancer**

Wirat Assawapanumat [1], Sopon Udomphon,Chanisa Chotipanich [1], Panya Sunintaboon [1], Norased Nasongkla [1]
1 Mahidol University, National Cyclotron and PET Centre, Thailand

2B4 16:00-18:00
General Session: ECG
Chairs: Akira Amano (Ritsumeikan University),
Phornphop Naiyanetr (Mahidol University)

2B4-1 **Heart Rate Variability Response to Low-Level Carbon Dioxide Exposure in Indoor Environment**

Miki Kaneko, Taiki Shigematsu, Satoshi Nakae, Ken Kiyono
1 Osaka University, Japan

2B4-2 **Pilot study on symbolic dynamic analysis of heart rate variability for evaluating three emotions**

Muhammad Shaufil Adha [1], Tomohiko Igasaki [1]
1 Kumamoto University, Japan

2B4-3 **A Preliminary Study on Excretion Electrocardiogram to Personal Identification in the Toilet**

Arata Nakagawa [1], Juhyon Kim [1], Kazuki Nakajima [1]
1 University of Toyama, Japan

2B4-4 **Intelligence ECG Monitor: Wireless platform and Application in Arrhythmia classifier**

Jirawat Iamsamang [1], Panida Cen [1], Weerapat Delong [1],Phornphop Naiyanetr [1]
1 Mahidol University

2B4-5 **Development of under-wear type device for electrocardiograph measurement**

Daisuke Goto [1], Chinami Taki [1], Minori Nakatani [1], Takuya Toyoshi [1],
Sima Okada [1], Naruhiro Shiozawa [1]
1 Ritsumeikan University, Japan

2B4-6 **Development of Automatic Sleep Stage Classification System using EMG and ECG Signals for Power Nap Monitoring Prototype**

Wachiraporn Aiamklin [1], Yunyong Punsawad [1]
1 Silpakorn University, Thailand

Room C Day 2 Saturday, August 24

2C1 10:30-12:30
General Session: Imaging & Optics
Chairs: Takehito Hayami (Okayama University),
Kajornvut Ounjai (King Mongkut's University of Technology Thonburi)

2C1-1 **Time-lapse optical imaging system for monitoring the resting membrane potential change of neurons in a mouse brain slice**

Yoko Machida [1], Yuta Yamada [1], Shota Mizunuma [1], Takashi Tominaga [2], Riichi Kajiwara [1]
1 Meiji University, Japan
2 Tokushima Bunri University, Japan

2C1-2 **The image analysis to detect erythrocytes' damage induced by high shear stress**

Masataka Inoue [1], Masaya Hakozaki [1], Jarod T. Horobin [2], Antony P. McNamee [2], Geoff D. Tansley [3], John F. Fraser [4], Michael J. Simmonds [2], Masahiro Shibata [1], Nobuo Watanabe [1]
1 Dept. of Life Sciences, Systems Engineering and Science, Graduate School of Engineering and Science, Shibaura Institute of Technology, Japan
2 Menzies Health Institute Queensland, Griffith University, Australia
3 School of Engineering and Built Environment, Griffith University, Australia
4 Critical Care Research Group, The Prince Charles Hospital, Australia

2C1-3 **System integration of a fluoroscopic image calibration using robot assisted surgical guidance for Distal locking process in closed intramedullary nailing of femur**

Sakol Nakdhamabhorn [1], Jackrit Suthakorn [1]
1 Mahidol University, Thailand

2C1-4 **Modeling of Fixational Eye Movement Using a non-Gaussian State-Space Model**

Hisashi Yoshida [1], Kaito Nagano [1], Yoshitaka Kitaoka [1], Takeshi Kohama [1]
1 Department of Computationa Systems Biology, Kindai University, Japan

2C1-5 **Headgear free eye tracker for developmental disorder screening using multiple video cameras**

Naoya Tanaka [1], Takehito Hayami [1], Takashi Matsuo [2], Kazuko Yoshioka [3], Kyosuke Fukuda [3], Kazunori Shidoji [4]

1 Okayama University, Japan

2 The University of Kitakyushu, Japan

3 Fukuoka Prefectural University, Japan

4 Kyushu University, Japan

2C1-6 **Logical Ensemble for Segmentation of Minority Classes in Medical Images using Deep Learning**

S. Tanpradit [1], T. Angsuwatanakul [1], M. Sangworasil [1], T. Matsuura [1], J. A. O'Reilly [1]

1 Rangsit University, Thailand

3A1 8:30-10:10
OS 5: Life Engineering of the Toilet
Organizer: Koji Oguri (Aichi Prefectural University)
Chairs: Koji Oguri (Aichi Prefectural University),
Kazuki Nakajima (University of Toyama)

Abstract:
Sensors are becoming smaller and more sophisticated. This makes long-term monitoring of biological information easier. As a result, research on human condition estimation technology development is in progress. A person's urination and defecation can be a very effective indicator to know a person's condition. In this session, we will focus on the toilet and discuss related IoT technologies.

3A1-1 **Development and evaluation of a noncontact uroflowmeter**

Kazuki Nakajima [1], Yoshio Kanayama [1, 2], Syunsuke Ikegami [1],
Takumi Kamimura [1], Kazunari Toda [2], Mamoru Hagiwara [3],
Hiroshi Kitamura [1]
1 University of Toyama, Toyama, Japan
2 NEC Solution Innovators, Ltd., Tokyo, Japan
3 Richell Corp., Toyama, Japan

3A1-2 **Salt Intake Reduction without Degrading QOL Using Salt Chip®**

Norihisa Miki [1, 2,] Kazuhiko Higashi [2]
1 Keio University, Japan
2 LTaste Inc., Japan

3A1-3 **Home uroflowmetry system with NB-iot communication.**

S. Rattanasomrerk [1], P. Naiyanetr [1]
1 Mahidol University, Thailand

3A1-4 **Study on urinary flow rate and volume based on multiple measurements per healthy adult Japanese men using a portable uroflowmeter (P-Flowdiary®)**

Masatake Shinohara [1], Kazumasa Torimoto [2], Atsushi Yamada [3],
Chie Matsushita [1], Hisashi Yoshida [4], Toshihisa Saka [1], Yoshihiko Hirao [1],
Akihide Hirayama [5], Nobumichi Tanaka [2], Kiyohide Fujimoto [2]
1 Department of Urology, Osaka Gyoumeikan Hospital, Japan
2 Department of Urology, Nara Medical University, Japan
3 Department of Urology, Morinomiya Hospital, Japan
4 Faculty of Biology-Oriented Science and Technology, Kindai University, Japan
5 Department of Urology, Kindai University Nara Hospital, Japan

3A1-5 **Flow Rate Estimation by Image Recognition of Simulated Urinary Flowing in the Toilet Bowl**

Haruki Kawanaka [1], Koji Oguri [1]
1 Aichi Prefectural University, Japan

3A2 10:30-12:30
OS 6: Muscle and skeletal system/Motor function
Organizer: Takehito Hayami (Okayama University)
Chairs: Yoshitaka Nakanishi (Kumamoto University),
Takehito Hayami (Okayama University)

Abstract:
Nowadays intelligent working machines and electronic devices made the repair and the extension of our body easier and more precise, especially in the fields of medicine and physiology. The musculoskeletal system which works as a slave in our body is recognized as a commander in man-machine system. The aim of this session is to make us revise the notion of the musculoskeletal system as a seamless one which connects between brain science, biomaterials and robotics by viewing the both roles of it, being composed of muscles and bones.

3A2-1 **New mechanical surface processing for bearing part in artificial joint to reduce macrophage activation**

Haruki Miyamoto [1], Nana Motojima [1], Yukio Fujiwara [1], Yuta Nakashima [1], Yoshitaka Nakanishi [1]
1 Kumamoto University, Japan

3A2-2 **Engineered bone scaffolds using 3D-printing technology**

Warachote Shinwasusin [1], Apavisakarn Charoensirisrap [1], Phornphop Naiyanetr [1]
1 Mahidol University, Thailand

3A2-3 **Three-dimensional multiscale surface-processing for creation of bio-inspired surfaces**

Yoshitaka Nakanishi [1], Kazuma Shibata [1], Yuta Nakashima [1]
1 Kumamoto University, Japan

3A2-4 **New objective skill assessment system for the laparoscopic intestinal anastomosis model and evaluation of validity**

Munenori Uemura [1], Morimasa Tomikawa [2], Satoshi Ieiri [1]

1 Kagoshima University, Japan,

2 Kyushu University, Japan

3A2-5 **Robot-Assisted Carrying System for Elderly**

Bibhu Sharma [1], Jackrit Suthakorn [1]

1 Mahidol University, Thailand

3A2-6 **Effects of gaze distance on direct pupillary light response: relaxation curve analysis**

Tomohiro Kimura [1], Takehito Hayami [1]

1 Okayama University, Japan

Room B Day 3 Sunday, August 25

3B1 8:30-10:30
General Session: Motor function & Muscle 3
Chairs: Munenori Uemura (Kagoshima University),
Ratanapat Chanubol (Prasat Neurological Institute)

3B1-1 **Improvement in motor skill performance related to the daytime nap timing**

Mako Ogawa [1], Takeshi Aihara [1], Hiroshi Sasaki [1]
1 Tamagawa University, Japan

3B1-2 **The development of upper extremity rehabilitation system based on combination of motor and cognitive training**

Thitikorn Kaewlee [1], Panrasee Ritthipravat [1]
1 Mahidol University Thailand

3B1-3 **A mathematical model and skeletal muscle fatigue**

Yuttamol Muangkram [1], Akira Amano [1]
1 College of Life Sciences, Ritsumeikan University, Japan

3B1-4 **Toward a stable telesurgery: current approaches**

Keita Ono
1 Mahidol University, Thailand

3B1-5 **Design of a Delivery Robot Prototype for In-Hospital Used**

Pittawat Thiuthipsakul, Jackrit Suthakorn
1 Department of Biomedical Engineering, Faculty of Engineering, Mahidol University, Thailand

3B2 10:30-12:00
General Session: EEG 3
Chairs: Jyunichi Hori (Niigata Univrsty),
Dilok Puanhvuan (Mahidol University)

3B2-1 **EEG Activity during Playing Game Design for Neurofeedback**

Ayumi Tahara [1], Nonthaporn Nakphu [1], Van Le Thi Cam [1],
Thitikorn Kaewlee [2], Yodchanan Wongsawat [2], Keiji Iramina [1]
1 Kyushu University, Japan,
2 Mahidol University, Thailand

3B2-2 **Thai Language Brain Spelling System**

Dilok Puanhvuan [1], Yodchanan Wongsawat [1]
1 Mahidol University, Thailand

3B2-3 **Comparing ERD/ERS pattern of motor imagery in VR and No-VR condition**

Fumiya Sanuki [1], Hiroyuki Iwata [1], Khanittha Kiatbamrungpunt [2], Keiji Iramina [1]
1 Kyushu University, Japan
2 Mahidol University, Thailand

3B2-4 **Visualization of visual pathway using spatiotemporal cortical dipole imaging considering filter property**

Junichi Hori [1], Genki Shirato [1], Shota Saito [1]
1 Niigata Univrsty, Japan

3B2-5 **BCI-Based Emotion Ranking System for Neuromarketing**

Nattapat Tanjariyaporn [1], Pisit Jitwiriyanon [1], Yodchanan Wongsawat [1]
1 Mahidol University, Thailand

3B2-6 **Effects of auditory white noise on visual working memory**

Toshihiro Tamura [1], Ruimin Wang [1], Keiji Iramina [1]
1 Kyushu University, Japan