The 7th International Symposium on Brainware LSI

February 28-29, 2020

Conference Room, Main Building (M601), RIEC, Tohoku University, Sendai, Japan

Sponsored by RIEC Collaboration Project Research (PJ#: H29/B17) and Brainware LSI Project, RIEC, Tohoku University, Japan.

Tentative Program

---------- February 28 (Friday) ----------

13:30- Registration

14:00-14:05 Opening remarks

<Session 1: Recognition & Learning I >

14:05-14:30 **Bio-inspired sparse coding for audio restoration**

César D. Salvador (Silicon Integrated Co., Ltd., China)

14:30-14:55 **Conceptual model of the auditory spatial attention in multi-source listening environment**

Ryo Teraoka, Shuichi Sakamoto, Zhenglie Cui, Yoiti Suzuki, Satoshi Shioiri (Tohoku University)

14:55-15:20 **Practical and Mathematical investigation for bio-sonar strategy of bats**

Yasufumi Yamada (Hiroshima University, Japan)

15:20-15:35 Coffee break

<Session 2: Brainware LSI Technologies I >

15:35-16:00 **Prefiltering Using Reflectionless Transmission-Line Model for Speech Recognition in Noise Environment**

Takemori Orima (Tohoku University, Japan)

16:00-16:25 **Capacity of fully binarized convolutional neural network**

Martin Lukac (School of Science and Technology, Nazarbayev University, Kazakhstan)

16:25-16:50 **In-Hardware Training Chip Based on CMOS Invertible Logic for Machine Learning**

Naoya Onizawa (Tohoku University, Japan)

16:50-17:15 **Toward efficient training of learning machines using dynamic stochastic computing**

Siting Liu (McGill University, Canada)

17:15-18:00 Break

18:00-21:00 Open discussion

---------- February 29 (Saturday) ----------

<Session 3: Recognition & Learning II >

09:00-09:25 **Hierarchical Decentralized Control Mechanism Underlying Brittle Stars' Locomotion**

Takeshi Kano (Tohoku University, Japan)

09:25-09:50 **The measurement of spatial extent of audiovisual attention by SSR and ERP**

Shin Ono, Shuichi Sakamoto, Ryo Teraoka, Yoshiyuki Sato, Yasuhiro Hatori, Chia-huei Tseng, Ichiro Kuriki, Satoshi Shioiri (Tohoku University, Japan)

09:50-10:15 **Enhancement and suppression in selective visual attention**

Søren K. Andersen (University of Aberdeen, UK)

10:15-10:30 Coffee break

<Session 4: Brainware LSI Technologies II >

10:30-10:55 **A Genetically Encoded Autonomous Bioluminescent Voltage Indicator for Neural Imaging**

Luke Theogarajan (UC Santa Barbara, USA)

10:55-11:20 **Analog circuit implementation of the Izhikevich neuron model**

Shigeo Sato (Tohoku University, Japan)

11:20-11:45 **Training methods of quantum neural networks**

Enrico Prati (Consiglio Nazionale delle Ricerche, Italy)

11:45-11:50 Closing remarks