

External Awards

Best Paper Award

Winners: Ryosuke Matsuo, Jun Shiomi, Tohru Ishihara, Hidetoshi Onodera, Kyoto University; Akihiko Shinya, Masaya Notomi, NTT Nanophotonics Center/NTT Basic Research Laboratories

Date: June 3, 2021

Organization: The Institute of Electronics, Information and Communication Engineers (IEICE)

For “Methods for Reducing Power and Area and BDD-based Optical Light Circuits.”

Published as: R. Matsuo, J. Shiomi, T. Ishihara, H. Onodera, A. Shinya, and M. Notomi, “Methods for Reducing Power and Area and BDD-based Optical Light Circuits,” IEICE Trans. Fundamentals, Vol. E102-A, No. 12, pp. 1751–1759, Dec. 2019.

Young Researcher Award

Winner: Yoko Sogabe, NTT Computer and Data Science Laboratories

Date: August 6, 2021

Organization: The Institute of Image Electronics Engineers of Japan

For “Deep Learning-based Image Reconstruction for Compressive Spectral Imaging with Spectrally Varying PSF.”

Published as: Y. Sogabe, M. Miyata, F. Kobayashi, S. Sugimoto, T. Kurozumi, T. Hashimoto, and Y. Hiwasaki, “Deep Learning-based Image Reconstruction for Compressive Spectral Imaging with Spectrally Varying PSF,” Proc. of Media Computing Conference 2021, June 2021.

Infographics VQA runners-up

Winners: Ryota Tanaka and Kyosuke Nishida, NTT Human Informatics Laboratories

Date: September 6, 2021

Organization: 16th International Conference on Document Analysis and Recognition (ICDAR 2021)

For “IG-BERT: Learning Text-Icon-Layout Representations and Arithmetic Operations for Infographic Understanding.”

Published as: R. Tanaka and K. Nishida, “IG-BERT: Learning Text-Icon-Layout Representations and Arithmetic Operations for Infographic Understanding,” ICDAR 2021, Apr. 2021.

Best Presentation Award / Best Industry Presentation Award

Winners: Kenji Tanaka, Yuki Arikawa, Tsuyoshi Ito, NTT Device Technology Laboratories; Kazutaka Morita, NTT Software Innovation Center; Naru Nemoto, NTT Device Technology Laboratories; Fumiaki Miura, NTT Software Innovation Center; Kazuhiko Terada, NTT Device Technology Laboratories; Junji Teramoto, NTT Software Innovation Center; Takeshi Sakamoto, NTT Device Technology Laboratories

Date: September 10, 2021

Organization: The IEICE Technical Committee on Reconfigurable Systems (RECONF)

For “With GPU-FPGA Heterogeneous Computing, Highly Effective Communication for Distributed Deep Learning.”

Published as: K. Tanaka, Y. Arikawa, T. Ito, K. Morita, N. Nemoto, F. Miura, K. Terada, J. Teramoto, and T. Sakamoto, “With GPU-FPGA Heterogeneous Computing, Highly Effective Communication

for Distributed Deep Learning,” IEICE-RECONF2020-19, Sept. 2020.

Distinguished Contributions Award

Winner: Yasushi Takatori, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a sub-editor of EB journal.

Distinguished Contributions Award

Winner: Yusuke Asai, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a sub-editor of EB journal.

Distinguished Contributions Award

Winner: Wataru Yamada, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a journal reviewer.

Distinguished Contributions Award

Winner: Tomoki Murakami, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a journal reviewer.

Distinguished Contributions Award

Winner: Motoharu Sasaki, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a journal reviewer.

Distinguished Contributions Award

Winner: Takeshi Onizawa, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a sub-editor of JB journal.

Distinguished Contributions Award

Winner: Hayato Fukuzono, NTT Access Network Service Systems Laboratories

Date: September 14, 2021

Organization: IEICE Communications Society

For his contributions to the IEICE Communications Society as a journal reviewer.

IEICE ComSoc Distinguished Contributions Award

Winner: Tatsuya Shimada, NTT Access Network Service Systems Laboratories

Date: September 15, 2021

Organization: IEICE Communications Society

For his contribution to the IEICE Communications Society as a member of the Council of Technical Committee Representatives.

Papers Published in Technical Journals and Conference Proceedings

Task Clustering Method Using User Interaction Logs to Plan RPA Introduction

Y. Urabe, S. Yagi, K. Tsuchikawa, and H. Oishi

Proc. of the 19th International Conference on Business Process Management (BPM 2021), Lecture Notes in Computer Science, Vol. 12875, pp. 273–288, Springer, Cham., August 2021.

Robotic process automation (RPA) software is a powerful tool that can automate business operations to reduce manual labor while improving operational quality by eliminating input errors. In order to efficiently and effectively improve business operations with RPA, it is necessary to clarify the types and volumes of actual business operations being performed by the employees and improve operations that have a large volume and are performed repeatedly. User interaction (UI) logs consist of users' activities performed on the computer and can be collected regardless of the business system or application to understand how employees work. However, it is difficult to understand the types and volumes of the executed tasks from such data because the task types are not recorded explicitly. In this work, we propose a method that clusters UI logs into task types to help analyzers identify high-volume and repetitive tasks for RPA introduction. As the operation types differ by task type, we utilize this characteristic to analyze the co-occurrence of operations and segment UI logs into a sequence of the same task types. Then, we perform clustering based on the operation types contained in the segments. We evaluated our approach using UI logs generated from actual scenarios in a workplace, and report the results and limitations.

Gaze Control during Reaching Is Flexibly Modulated to Optimize Task Outcome

N. Abekawa, H. Gomi, and J. Diedrichsen

Journal of Neurophysiology, Vol. 126, No. 3, pp. 816–826, Sept. 2021.

When reaching for an object with the hand, the gaze is usually directed at the target. In a laboratory setting, fixation is strongly maintained at the reach target until the reaching is completed, a phenomenon known as “gaze anchoring.” While conventional accounts of such tight eye-hand coordination have often emphasized the internal synergetic linkage between both motor systems, more recent optimal control theories regard motor coordination as the adaptive solution to task requirements. We here investigated to what degree gaze control during reaching is modulated by task demands. We adopted a gaze-anchoring paradigm in which participants had to reach for a target location. During the reach, they additionally had to make a saccadic eye movement to a salient visual cue presented at locations other than the target. We manipulated the task demands by independently changing reward contingencies for saccade reaction time (RT) and reaching accuracy. On average, both saccade RTs and reach error varied systematically with reward condition, with reach accuracy improving when the saccade was delayed. The distribution of the saccade RTs showed two types of eye movements: fast saccades with short RTs, and voluntary saccade with longer RTs. Increased reward for high reach accuracy reduced the probability of fast saccades but left their latency unchanged. The results suggest that gaze anchoring acts through a suppression of fast saccades, a mechanism that can be adaptively adjusted to the current task demands.