External Awards

20th Award on Superconductivity Science and Technology
Winner: Hideki Yamamoto, Yoshiharu Krockenberger, NTT Basic Research Laboratories, and Michio Naito, Tokyo University of Agriculture and Technology
Date: March 3, 2016
Organization: The Society of Non-Traditional Technology Forum of Superconductivity Science and Technology

For discovery of undoped cuprate superconductors and research on their physical properties.

2015 Best Paper Award
Winner: Yuta Kikuchi, Tokyo Institute of Technology; Tsutomu Hirao, NTT Communication Science Laboatories; Hiroya Takamura, Manabu Okumura, Tokyo Institute of Technology; and Masaaki Nagata, NTT Communication Science Laboatories
Date: March 9, 2016
Organization: The Association for Natural Language Processing

For "Summarizing a Document by Trimming a Nested Tree Structure."
Published as: Y. Kikuchi, T. Hirao, H. Takamura, M. Okumura, and M. Nagata, "Summarizing a Document by Trimming a Nested Tree Structure," Journal of Natural Language Processing, Vol. 22, No. 3, pp. 197–217, Sept. 2015.

Telecom System Technology Award for Students
Winner: Daichi Kitamura, Graduate University for Advanced Studies (SOKENDAI); Hiroshi Saruwatari, The University of Tokyo; Hirokazu Kameoka, NTT Communication Science Laboatories; Yu Takahashi, Kazunobu Kondo, Yamaha Corporation; and Satoshi Nakamura, Nara Institute of Science and Technology
Date: March 28, 2016
Organization: The Telecommunications Advancement Foundation

For "Multichannel Signal Separation Combining Directional Clustering and Nonnegative Matrix Factorization with Spectrogram Restoration."
Published as: D. Kitamura, H. Saruwatari, H. Kameoka, Y. Takahashi, K. Kondo, and S. Nakamura, "Multichannel Signal Separation Combining Directional Clustering and Nonnegative Matrix Factorization with Spectrogram Restoration," IEEE/ACM Transactions on Audio, Speech, and Language Processing, Vol. 23, No. 4, pp. 654–669, Apr. 2015.

SIP Technical Meeting Award 2016
Winner: Fumihiko Ishiyama, NTT Network Technology Laboratories
Date: March 2016
Organization: The Institute of Electronics, Information and Communication Engineers (IEICE) Engineering Sciences Society, Technical Committee on Signal Processing (SIP)

For "Method of Disaggregating Appliances from an Aggregate Current Waveform on a Power Distribution Board."
Published as: F. Ishiyama, H. Inoue, and Y. Suzuki, "Method of Disaggregating Appliances from an Aggregate Current Waveform on a Power Distribution Board," IEICE Tech. Rep., Vol. 115, No. 522, SIP2015-183, pp. 379–384, Mar. 2016.

Chairman's Prize
Winner: Keisuke Nishi, Shigeo Otsu, Seiji Yoshida, and Takashi Hirose, NTT Network Technology Laboratories
Date: March 2016
Organization: IEICE Communications Society, Technical Committee on Communication Systems (CS)

For "Improvement of the Time Synchronization Precision by the Network-assisted GPS Time Synchronization Systems."
Published as: K. Nishi, S. Otsu, S. Yoshida, and T. Hirose, "Improvement of the Time Synchronization Precision by the Network-assisted GPS Time Synchronization Systems," IEICE Tech. Rep., Vol. 115, No. 406, CS2015-73, pp. 1–6, Jan. 2016.

The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Prizes for Science and Technology (Development Category)
Winner: Masahito Tomizawa, NTT Network Innovation Laboratories; Hiroshi Onaka, Fujitsu Limited; Takashi Mizuochi, Mitsubishi Electric Corporation; and Kiyoshi Fukuchi, NEC Corporation
Date: April 20, 2016
Organization: Ministry of Education, Culture, Sports, Science and Technology

For the development of 100G digital coherent optical network technology.

The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology, Prizes for Science and Technology (Research Category)
Winner: Makio Kashino, NTT Communication Science Laboratories
Date: April 20, 2016
Organization: Ministry of Education, Culture, Sports, Science and Technology

For the research on human auditory mechanisms that support human perception in various environments.

The Young Scientists' Prize of the Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology
Winner: Haruki Sanada, NTT Basic Research Laboratories
Date: April 20, 2016
Organization: Ministry of Education, Culture, Sports, Science and Technology

For the research on electron spin manipulation in semiconductor quantum structures.

Best Research Award
Winner: Akihiro Shimoda, Keisuke Ishibashi, Shigeaki Harada, NTT Network Technology Laboratories; Kazumichi Sato, NTT Communications; Masayuki Tsujino, NTT Network Technology Laboratories; Takeru Inoue, NTT Network Innovation Laboratories; Masaki Shimura, Takanori Takebe, Kazuki Takahashi, Tatsuya Mori, Shigeki Goto, Waseda University
Date: June 1, 2016

Organization: IEICE Communications Society, Technical Committee on Internet Architecture (IA)

For "Inferring the Number of Accesses to Internet Services Using DNS Traffic."
Published as: A. Shimoda, K. Ishibashi, S. Harada, K. Sato, M. Tsujino, T. Inoue, M. Shimura, T. Takebe, K. Takahashi, T. Mori, and S. Goto, "Inferring the Number of Accesses to Internet Services Using DNS Traffic," Proc. of IA2015 (Workshop on Internet Architecture and Applications 2015), IA2015-63, pp.129–134, Nov. 2015.

KIYASU-Zen'iti Award

Winner: Hayato Fukuzono, Tomoki Murakami, NTT Access Network Service Systems Laboratories; Riichi Kudo, NTT DOCOMO; Yasushi Takatori, Masato Mizoguchi, NTT Access Network Service Systems Laboratories
Date: June 2, 2016
Organization: IEICE

For "Weighted-combining Calibration on Multiuser MIMO Systems with Implicit Feedback."
Published as: H. Fukuzono, T. Murakami, R. Kudo, Y. Takatori, and M. Mizoguchi, "Weighted-combining Calibration on Multiuser MIMO Systems with Implicit Feedback," IEICE Trans. Commun., Vol. E98-B, No. 4, pp. 701–713, Apr. 2015.

Best Paper Award

Winner: Hayato Fukuzono, Tomoki Murakami, NTT Access Network Service Systems Laboratories; Riichi Kudo, NTT DOCOMO; Yasushi Takatori, Masato Mizoguchi, NTT Access Network Service Systems Laboratories
Date: June 2, 2016
Organization: IEICE

For "Weighted-combining Calibration on Multiuser MIMO Systems with Implicit Feedback."
Published as: H. Fukuzono, T. Murakami, R. Kudo, Y. Takatori, and M. Mizoguchi, "Weighted-combining Calibration on Multiuser MIMO Systems with Implicit Feedback," IEICE Trans. Commun., Vol. E98-B, No. 4, pp. 701–713, Apr. 2015.

Papers Published in Technical Journals and Conference Proceedings

Feasibility of Traffic Matrix Estimation Scheme on Service-integrated Carrier Networks

Y. Uematsu, S. Kamamura, R. Sugiyama, T. Takeda, T. Miyamura, and K. Sasayama

IEICE Transactions on Communications (Japanese Edition), Vol. J98-B, No. 3, pp. 255–265, March 2015.

Each network provider promotes multi-service integration on a substrate IP network for cost reduction. For continuous optimization of facilities or network topology, it is necessary to accurately grasp the traffic structure of each service with its variations. This paper proposes a traffic structure analysis framework for service-integrated carrier networks, with an emphasis on improvement of the traffic matrix estimation scheme based on Tomo Gravity for estimation accuracy and extensibility for large-scale networks. Performance attributes of the prototype software indicate the feasibility of the proposed scheme on nationwide service-integrated carrier networks.

Machine-learning-based Prediction of a Missed Scheduled Clinical Appointment by Patients with Diabetes

H. Kurasawa, K. Hayashi, A. Fujino, K. Takasugi, T. Haga, K. Waki, T. Noguchi, and K. Ohe

Journal of Diabetes Science and Technology, Vol. 10, No. 3, pp. 730–736, October 2015.

About 10% of patients with diabetes discontinue treatment, resulting in the progression of diabetes-related complications. The objective was to predict a missed clinical appointment (MA), which can lead to discontinued treatment for diabetes patients. A machine-learning algorithm was used to build a logistic regression model for MA predictions. Data were extracted from electronic medical records and classified into two groups: one related to patients' clinical condition (X1) and the other related to previous findings (X2). The records used were those of the University of Tokyo Hospital, and they included the history of 16,026 clinical appointments scheduled by 879 patients. Records between April 1, 2011, and June 30, 2014, were inspected for a history of MAs. The best predictor of MAs proved to be X1 + X2 (AUC = 0.958). Our findings may provide information to help clinicians make timely interventions to avoid MAs.

View-directional Consistency Constraints for Robust 3D Object Recognition

J. Shimamura, T. Yoshida, Y. Taniguchi, H. Yabushita, K. Sudo, and K. Murasaki

IIEEJ Transactions on Image Electronics and Visual Computing, Vol. 3, No. 2, pp. 164–173, December 2015.

Robust object recognition is the key to real-world visual search applications. This paper proposes a novel geometric verification method to handle 3D viewpoint changes under cluttered scenes for robust object recognition.

GPS Trajectory Data Enrichment Based on a Latent Statistical Model

A. Kinoshita, A. Takasu, K. Aihara, J. Ishii, H. Kurasawa, H. Sato, M. Nakamura, and J. Adachi

Proc. of ICPRAM 2016 (the 5th International Conference on Pattern Recognition Applications and Methods), pp. 255–262, Rome, Italy, February 2016.

This paper proposes a latent statistical model for analyzing global positioning system (GPS) trajectory data. Because of the rapid spread of GPS-equipped devices, numerous GPS trajectories have become available, and they are useful for various location-aware systems. To better utilize GPS data, a number of sensor data mining techniques have been developed. This paper discusses the application of a latent statistical model to two closely related problems, namely, moving mode estimation and interpolation of the GPS observation. The proposed model estimates a latent mode of moving objects and represents moving patterns according to the mode by exploiting a large GPS trajectory dataset. We evaluate the effectiveness of the model through experiments using the GeoLife GPS Trajectories dataset and show that more than three-quarters of covered locations were correctly reproduced by interpolation at a fine granularity.

Shared-resource-pool Design Scheme for Failure-resilient Optical Transport Network

Y. Uematsu, M. Nakagawa, H. Yamamoto, S. Kamamura, K. Genda, and M. Katayama

IEICE Transactions on Communications (Japanese Edition), Vol. J99-B, No. 4, pp. 345–355, April 2016.

This paper introduces a shared-resource-pool control scheme and operation architecture utilizing flexible optical wiring infrastructure and centralized controlling technologies to achieve a higher availability and facilitated maintenance scheme in nationwide optical transport network across thousands of office buildings. It also proposes a design scheme of resource-pool quantity and maintenance immediacy to achieve end-to-end high availability in nationwide transport network and shows performance attributes of pooled transport resources in terms of enhanced-network-availability and relaxation in network-maintenance constraints.

Interruption-free Optical Access Line Transfer System Using Ring Buffer

K. Noto, M. Inoue, K. Katayama, N. Honda, and T. Manabe

IEICE Transactions on Communications (Japanese Edition), Vol. J99-B, No. 5, pp. 381–389, May 2016.

We have been studying an optical line switching system that uses electronic and optical delay lines to realize error-free optical access line switching. However, the use of an optical delay line increases the size of the optical line switching system. Here, we propose a newly designed delay line system that includes a ring buffer electronic delay line, which enables the system size to be reduced. We constructed and evaluated a prototype system.

MPEG-4 Audio Lossless Coding (ALS) Applied to Archiving System of Recorded Audio Project

N. Harada, Y. Kamamoto, and T. Moriya

IPSJ Journal, Vol. 57, No. 5, pp. 1355–1364, May 2016.

This paper proposes an information package to be applied for archiving system of recorded audio project. The devised information package format complies with the Open Archival Information System reference model and its implementation makes use of an optimized MPEG-4 Audio Lossless Coding codec library for audio data compression.

Auditory Multi-stability: Idiosyncratic Perceptual Switching Patterns, Executive Functions, and Personal Traits

D. Farkas, S. L. Denham, A. Bendixen, D. Tóth, H. M. Kondo, and I. Winkler

PLOS ONE, Vol. 11, No. 5, 015481, May 2016.

We explored correlates of the individual switching patterns with executive functions, personality traits, and creativity. The main dimensions on which individual switching patterns differed from each other were identified using multidimensional scaling. Individuals with high scores on the dimension explaining the largest portion of the inter-individual variance switched more often between the alternative perceptions than those with low scores. The ego-resiliency personality trait, which reflects a tendency for adaptive flexibility and experience seeking, was significantly positively related to this dimension. Taking these results together, we suggest that this dimension may reflect the individual's tendency for exploring the auditory environment. Thus individual patterns of perceptual switching in the auditory streaming paradigm are related to some personality traits and executive functions.