External Awards

Research Award of Excellence
Winner: Muneaki Ogawa and Yoshikazu Takahashi, NTT Network Service Systems Laboratories
Date: March 2, 2017
Organization: The Institute of Electronics, Information and Communication Engineers (IEICE) Information and Communication Technology for Safe and Secure Life (ICTSSL)

For "The Trends of Standardization on Emergency Communications and Future Technical Issues."
Published as: M. Ogawa and Y. Takahashi, "The Trends of Standardization on Emergency Communications and Future Technical Issues," IEICE Tech. Rep., Vol. 116, No. 92, ICTSSL2016-3, pp. 11–15, June 2016.

Achievement Award
Winner: Shoji Makino, University of Tsukuba; Hiroshi Saruwatari, The University of Tokyo; Hiroshi Sawada, NTT Communication Science Laboratories
Date: June 1, 2017
Organization: IEICE

For pioneering research on blind source separation of acoustic signals.

Achievement Award
Winner: Kunio Kashino, Hidehisa Nagano, and Takayuki Kurozumi, NTT Communication Science Laboratories
Date: June 1, 2017
Organization: IEICE

For research and development of extremely robust and fast media search technology.

ICSS Research Award
Winner: Hiroki Nakano, Yokohama National University; Fumihiro Kanei and Mitsuaki Akiyama, NTT Secure Platform Laboratories; Katsunari Yoshioka; Yokohama National University
Date: June 8, 2017
Organization: IEICE Technical Committee on Information and Communication System Security (ICSS)

For "Towards Finding Code Snippets on a Question and Answer Website Causing Mobile App Vulnerabilities."
Published as: H. Nakano, F. Kanei, M. Akiyama, and K. Yoshioka, "Towards Finding Code Snippets on a Question and Answer Website Causing Mobile App Vulnerabilities," IEICE Tech. Rep., Vol. 116, No. 522, ICSS2016-68, pp. 171–176, Mar. 2017.

Best Demo Award
Winner: Naoki Higo and Yoshiko Sueda; NTT Network Technology Laboratories; Arata Koike, Tokyo Kasei University
Date: June 13, 2017
Organization: IEEE International Symposium on Local and Metropolitan Area Networks (LANMAN) 2017

For "Cog: Overlay Network Functions Assisting Connected IoT Service Systems."
Published as: N. Higo, Y. Sueda, and A. Koike, "Cog: Overlay Network Functions Assisting Connected IoT Service Systems," Proc. of LANMAN 2017, Osaka, Japan, June 2017.

The Meritorious Award on Radio Presented by the Chairman of the Board of ARIB
Winner: Makoto Yaita, NTT Device Technology Laboratories; Yasuhiro Nakasha, Fujitsu Laboratories Ltd.; Akifumi Kasamatsu, National Institute of Information and Communications Technology
Date: June 15, 2017
Organization: Association of Radio Industries and Businesses (ARIB)

For research on terahertz wireless communications.

TTC Chairman's Prize
Winner: Kenichi Hiragi, NTT Network Service Systems Laboratories
Date: June 20, 2017
Organization: The Telecommunication Technology Committee (TTC)

For achievement of standardization progress concerning call control protocol from public switched telephone networks to IP interconnection.

Distinguished Service Award
Winner: Muneaki Ogawa, NTT Network Service Systems Laboratories
Date: June 20, 2017
Organization: TTC

For achievement of standardization progress concerning IP interconnection specifications for emergency notification systems.

Distinguished Service Award
Winner: Shoji Kimura, NTT Network Service Systems Laboratories
Date: June 20, 2017
Organization: TTC

For promoting standardization efforts concerning network operations management.

Excellent Presentation Award
Winner: Kana Eguchi, NTT Service Evolution Laboratories
Date: June 30, 2017
Organization: Information Processing Society of Japan (IPSJ) Multimedia, Distributed, Cooperative, and Mobile (DICOMO) 2017 Symposium

For "Missing R-R Interval Complement Method for Heart Rate Variability Analysis in Frequency Domain Using Wearable ECG Devices."
Published as: K. Eguchi, R. Aoki, K. Yoshida, and T. Yamada, "Missing R-R Interval Complement Method for Heart Rate Variability Analysis in Frequency Domain Using Wearable ECG Devices," Proc. of DICOMO 2017, 4G-5, pp. 888–897, Sapporo, Hokkaido, Japan, June 2017 (in Japanese).

Young Researcher Award
Winner: Asuka Nakajima, NTT Secure Platform Laboratories
Date: June 30, 2017

Organization: IPSJ DICOMO 2017 Symposium

For "Investigation of Method to Assist in Identification of Patched Part of Vulnerable Software Based on Patch Diffing."
Published as: A. Nakajima, R. Kimura, Y. Kawakoya, M. Iwamura, and T. Hariu, "Investigation of Method to Assist in Identification of Patched Part of Vulnerable Software Based on Patch Diffing," Proc. of DICOMO 2017, 4H-2, pp. 905–910, Sapporo, Hokkaido, Japan, June 2017 (in Japanese).

Young Researcher Award
Winner: Satoshi Hasegawa, NTT Secure Platform Laboratories
Date: June 30, 2017
Organization: IPSJ DICOMO 2017 Symposium

For "Implementation and Evaluation of Privacy Preserving Fisher's Exact Test for GWAS."
Published as: S. Hasegawa, K. Hamada, K. Chida, K. Misawa, S. Ogishima, and M. Nagasaki, "Implementation and Evaluation of

Privacy Preserving Fisher's Exact Test for GWAS," Proc. of DICOMO 2017, 2H-3, pp. 430–437, Sapporo, Hokkaido, Japan, June 2017 (in Japanese).

Best Paper Award
Winner: Bo Sun, Waseda University; Xiapu Luo, The Hong Kong Polytechnic University; Mitsuaki Akiyama and Takuya Watanabe, NTT Secure Platform Laboratories; Tatsuya Mori, Waseda University
Date: July 6, 2017
Organization: The 2017 International Conference on Applications and Techniques in Information Security (ATIS)

For "Characterizing Promotional Attacks in Mobile App Store."
Published as: B. Sun, X. Luo, M. Akiyama, T. Watanabe, and T. Mori, "Characterizing Promotional Attacks in Mobile App Store," Applications and Techniques in Information Security—Proc. of ATIS 2017, Auckland, New Zealand, pp. 113–127, in Communications in Computer and Information Science Series, Vol. 719, Springer, 2017.

Papers Published in Technical Journals and Conference Proceedings

Topological Graph Layouts into a Triangular Prism
M. Miyauchi

Discrete and Computational Geometry and Graphs—18th Japan Conference, JCDCGG2015, Kyoto, Japan, September 14–16, 2015, Revised Selected Papers, pp. 241–246, in Lecture Notes in Computer Science, Vol. 9943, Springer, July 2016.

Prism layouts are special cases of track layouts of graphs. A triangular prism layout for graphs is a graph layout into a triangular prism that carries the vertices along the three crests between two triangles of the prism and the edges in the three rectangular surfaces such that no two edges cross in the interior of the surfaces. Also, a topological prism layout for graphs is defined so that edges are allowed to cross the crests. As for topological prism layouts, it is desirable to have good bounds on the number of edge-crossings over crests for various classes of graphs. This paper constructs two-color-edge topological triangular prism layouts for complete bipartite graphs with fewer edge-crossings over the crests than previous results.

(*d*, 3)-track Layouts of Bipartite Graph Subdivisions
M. Miyauchi

Proc. of FIT (Forum on Information Technology) 2016, Part 1, pp. 5–10, Toyama, Japan, September 2016.

A (*d*, *k*)-*track layout* of a graph G consists of a *k-track assignment* of G and an edge *d*-coloring of G with no monochromatic *X-crossing*. This paper studies the problem of (*d*, 3)-track layout of bipartite

graph subdivisions. As for track layout, V. Dujmović and D. R. Wood showed that every graph G with n vertices has a (*d*, 3)-track subdivision of G with $2\lceil \log_d \mathrm{qn}(G) \rceil + 1$ division vertices per edge, where $\mathrm{qn}(G)$ is the queue number of G. This paper improves their result for the case of bipartite graphs, and shows that for every integer $d \geq 2$, every bipartite graph $G_{m,n}$ has a (*d*, 3)-track subdivision of $G_{m,n}$ with $\lceil \log_d n \rceil - 1$ division vertices per edge, where m and n are the numbers of vertices of the partite sets of $G_{m,n}$ with $m \geq n$.

Linear Predictive Coding without Yule-Walker Approximation for Transient Signal Analysis – Application to Switching Noise
F. Ishiyama, Y. Okugawa, and K. Takaya

Proc. of CSPA 2017 (13th IEEE International Colloquium on Signal Processing & its Applications), pp. 46–50, Penang, Malaysia, March 2017.

We are investigating countermeasure techniques against electric noise on telecommunication and related equipment. There are many types of electric noise, and we focus on the characterization of transient noise such as the switching noise of switching power supplies. We are developing a method of transient signal analysis based on linear predictive coding (LPC) for the purpose. Unfortunately, as standard LPC contains Yule-Walker (YW) approximation, which replaces a given time series with a periodic time series for simplification, it is not suitable for transient signal analysis. Therefore, our

method of transient signal analysis does not contain YW approximation. Instead, we use the local linearization technique, which was developed in the field of quantum mechanics. Our method makes it possible to obtain instantaneous frequencies and instantaneous decay rates simultaneously with high precision from a small number of samples. We discuss our LPC method avoiding the use of YW approximation and using the local linearization technique and its application to repetitive ringing signals, which mimics the switching noise of a switching power supply, to show the efficiency of our method.

360-degree Screen-free Floating 3D Image in a Crystal Ball Using a Spatially Imaged Iris and Rotational Multiview DFD Technologies

T. Kawakami, M. Date, M. Sasai, and H. Takada

Applied Optics, Vol. 56, No. 22, pp. 6156–6167, August 2017.

A rotational multiview depth-fused 3D (DFD) display and 360-deg displaying optics using a spatially imaged iris method are proposed to realize a 360-deg 3D image. This method enables displaying clear floating images in a crystal ball. Its symmetric optics provide clear and natural 360-deg images with smooth motion parallax in horizontal and vertical directions using the directional selectivity of a spatially imaged iris method and natural 3D images of a rotational multiview DFD display.