

External Awards

Communications Society: Distinguished Contributions Award

Winner: Hayato Fukuzono, NTT Access Network Service Systems Laboratories

Date: September 21, 2016

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

For his contributions as a peer review member for papers submitted to IEICE Transactions on Communications.

JSAI 2016 Annual Conference Award

Winner: Koh Mitsuda and Ryuichiro Higashinaka, NTT Media Intelligence Laboratories; Toshirou Makino, NTT Software Corporation; and Yoshihiro Matsuo, NTT Media Intelligence Laboratories

Date: March 1, 2017

Organization: The Japanese Society for Artificial Intelligence (JSAI)

For “Collection and Analysis of Implicit Information in Chat-oriented Dialogue.”

Published as: K. Mitsuda, R. Higashinaka, T. Makino, and Y. Matsuo, “Collection and Analysis of Implicit Information in Chat-oriented Dialogue,” JSAI 2016 (The 30th Annual Conference of the Japanese Society for Artificial Intelligence), Fukuoka, Japan, June 2016.

Kambayashi Young Researcher Award

Winner: Kyosuke Nishida, NTT Media Intelligence Laboratories

Date: March 8, 2017

Organization: The Database Society of Japan

For his achievements in authoring published papers such as “Understanding the Semantic Structures of Tables with a Hybrid Deep Neural Network Architecture,” “Probabilistic Identification of Visited Point-of-Interest for Personalized Automatic Check-in,” and “Improving Tweet Stream Classification by Detecting Changes in Word Probability.”

Published as: K. Nishida, K. Sadamitsu, R. Higashinaka, and Y. Matsuo, “Understanding the Semantic Structures of Tables with a Hybrid Deep Neural Network Architecture,” Proc. of the Thirty-First AAAI Conference on Artificial Intelligence, San Francisco, CA, USA, Feb. 2017.

K. Nishida, H. Toda, T. Kurashima, and Y. Suhara, “Probabilistic Identification of Visited Point-of-Interest for Personalized Automatic Check-in,” Proc. of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing, pp. 631–642, Seattle, WA, USA, Sept. 2014.

K. Nishida, T. Hoshide, and K. Fujimura, “Improving Tweet Stream Classification by Detecting Changes in Word Probability,” Proc. of the 35th international ACM SIGIR Conference on Research and Development in Information Retrieval, pp. 971–980, Portland, OR, USA, Aug. 2012.

Excellent Interactive Award

Winner: Kyosuke Nishida, Kugatsu Sadamitsu, Ryuichiro Higashinaka, and Yoshihiro Matsuo, NTT Media Intelligence Laboratories

Date: March 8, 2017

Organization: The 9th Forum on Data Engineering and Information Management (DEIM2017)

For “TabNet: A Hybrid Deep Neural Network that Understands the Semantic Structures of Tables.”

Published as: K. Nishida, K. Sadamitsu, R. Higashinaka, and Y. Matsuo, “TabNet: A Hybrid Deep Neural Network that Understands the Semantic Structures of Tables,” Proc. of DEIM2017, B6-4, Takayama, Gifu, Japan, Mar. 2017 (in Japanese).

SIGGN-101 Best Presentation Award

Winner: Tomohiro Kokogawa, NTT Secure Platform Laboratories

Date: March 11, 2017

Organization: Information Processing Society of Japan (IPSJ) Special Interesting Group on Groupware and Network Services (SIGGN)

For “Visualization and Study of Incident Response Capability of Organizations Based on ISO 22320.”

Published as: T. Kokogawa, Y. Maeda, A. Amano, and Y. Kohno, “Visualization and Study of Incident Response Capability of Organizations Based on ISO 22320,” IPSJ SIG Technical Report, Vol. 2017-GN-101, No. 23, Mar. 2017 (in Japanese).

The Awaysa Prize Young Researcher Award

Winner: Yuma Koizumi, NTT Media Intelligence Laboratories

Date: March 16, 2017

Organization: The Acoustical Society of Japan (ASJ)

For “A Study of Reinforcement Learning for Sound Source Enhancement to Maximize Perceptual Score.”

Published as: Y. Koizumi, K. Niwa, K. Kobayashi, and Y. Haneda, “A Study of Reinforcement Learning for Sound Source Enhancement to Maximize Perceptual Score,” Proc. of the 2016 Autumn Meeting of ASJ, Toyama, Japan, Sept. 2016.

Young Scientist Award of the Physical Society of Japan

Winner: Yuichiro Matsuzaki, NTT Basic Research Laboratories

Date: March 18, 2017

Organization: The Physical Society of Japan

For his research on robust magnetic field sensing beyond the standard quantum limit.

Published as: T. Tanaka, P. Knott, Y. Matsuzaki, S. Dooley, H. Yamaguchi, W. J. Munro, and S. Saito, “Proposed Robust Entanglement-based Magnetic Field Sensor beyond the Standard Quantum Limit,” Phys. Rev. Lett., Vol. 115, 170801, Oct. 2015.

Y. Matsuzaki, X. Zhu, K. Kakuyanagi, H. Toida, T. Shimo-Oka, N. Mizuochi, K. Nemoto, K. Semba, W. J. Munro, H. Yamaguchi, and S. Saito, “Improving the Coherence Time of a Quantum System via a Coupling to a Short-lived System,” Phys. Rev. Lett., Vol. 114, 120501, Mar. 2015.

Y. Matsuzaki, S. C. Benjamin, and J. Fitzsimons, “Magnetic Field Sensing beyond the Standard Quantum Limit under the Effect of Decoherence,” Phys. Rev. A, Vol. 84, 012103, July 2011.

The Young Scientists’ Prize, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology

Winner: Yasuhiro Fujiwara, NTT Software Innovation Center

Date: April 19, 2017

Organization: The Ministry of Education, Culture, Sports, Science and Technology (MEXT)

For his research on fast graph mining algorithms that support artificial intelligence.

Prize for Science and Technology, Development Category, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology

Winner: Kazuhide Nakajima, NTT Access Network Service Systems Laboratories; Izumi Sankawa, NTT Electronics; and Shigeru Tomita, NTT Advanced Technology

Date: April 19, 2017

Organization: MEXT

For the development of low bending loss optical fibers.

Prize for Science and Technology, Research Category, The Commendation for Science and Technology by the Minister of Education, Culture, Sports, Science and Technology

Winner: Akira Fujiwara, NTT Basic Research Laboratories

Date: April 19, 2017

Organization: MEXT

For his research on the ultimate control of electrons in nanostructures, and device applications.

Tsujii-Shigeo Security Paper Award

Winner: Mehdi Tibouchi, NTT Secure Platform Laboratories

Date: April 20, 2017

Organization: Japan Society of Security Management

For “Zeroizing Attacks on Indistinguishability Obfuscation over CLT13.”

Published as: J.-S. Coron, M. S. Lee, T. Lepoint, and M. Tibouchi, “Zeroizing Attacks on Indistinguishability Obfuscation over CLT13,” *Public-Key Cryptography—PKC 2017—the 20th IACR International Conference on the Practice and Theory in Public-Key Cryptography*, Amsterdam, The Netherlands, Mar. 2017, pp. 41–58, Springer.

Best Paper

Winner: Kosuke Nakamura, Masahiro Suzuki, Hideyuki Torii, Kazutake Uehira, Kanagawa Institute of Technology; Youichi Takashima, NTT Service Evolution Laboratories

Date: May 9, 2017

Organization: IARIA (International Academy, Research, and Industry Association)

For “Embedding and Detecting Patterns in a 3D Printed Object.”

Published as: K. Nakamura, M. Suzuki, H. Torii, K. Uehira, and Y. Takashima, “Embedding and Detecting Patterns in a 3D Printed Object,” *Proc. of PATTERNS 2017 (The Ninth International Conferences on Pervasive Patterns and Applications)*, Athens, Greece, Feb. 2017.

IEICE-CS NV Best Presentation Award

Winner: Yosuke Takahashi, Akito Suzuki, and Masayuki Tsujino, NTT Network Technology Laboratories; Noriaki Kamiyama, Fukuoka University; Keisuke Ishibashi, NTT Network Technology Laboratories; Kohei Shiimoto, Tokyo City University; Tatsuya Otoshi, Yuichi Ohsita, and Masayuki Murata, Osaka University

Date: May 11, 2017

Organization: The Technical Committee on Network Virtualization (NV), IEICE Communications Society (CS)

For “Experimental Demonstration of a Flow Mining Based Proactive Network Control Technology on a Wide Area SDN Testbed.”

Published as: Y. Takahashi, A. Suzuki, M. Tsujino, N. Kamiyama, K. Ishibashi, K. Shiimoto, T. Otoshi, Y. Ohsita, and M. Murata, “Experimental Demonstration of a Flow Mining Based Proactive Network Control Technology on a Wide Area SDN Testbed,” *The 18th NV Symposium*, Tokyo, Japan, Apr. 2016.

ITU-AJ Accomplishment Award

Winner: Kazuhide Nakajima, NTT Access Network Service Systems Laboratories

Date: May 17, 2017

Organization: The ITU Association of Japan (ITU-AJ)

For his commitment in international standardization activities concerning optical fibers in International Telecommunication Union - Telecommunication Standardization Sector (ITU-T) Study Group 15.

Best Paper Award

Winner: Daiki Chiba, Takeshi Yagi, Mitsuaki Akiyama, Kazufumi Aoki, Takeo Hariu, NTT Secure Platform Laboratories; Shigeaki Goto, Waseda University

Date: May 19, 2017

Organization: IEICE Communications Society

For “BotProfiler: Detecting Malware-infected Hosts by Profiling Variability of Malicious Infrastructure.”

Published as: D. Chiba, T. Yagi, M. Akiyama, K. Aoki, T. Hariu, and S. Goto, “BotProfiler: Detecting Malware-infected Hosts by Profiling Variability of Malicious Infrastructure,” *IEICE Trans. Commun.*, Vol. E99-B, No. 5, pp. 1012–1023, May 2016. DOI:10.1587/transcom.2015AMP0001.

Best Paper Award

Winner: Riichi Kudo, B. A. Hirantha Sithira Abeysekera, Yusuke Asai, Takeo Ichikawa, Yasushi Takatori, and Masato Mizoguchi, NTT Access Network Service Systems Laboratories

Date: May 19, 2017

Organization: IEICE

For “User Equipment Centric Downlink Access in Unlicensed Spectrum for Heterogeneous Mobile Network.”

Published as: R. Kudo, B. A. H. S. Abeysekera, Y. Asai, T. Ichikawa, Y. Takatori, and M. Mizoguchi, “User Equipment Centric Downlink Access in Unlicensed Spectrum for Heterogeneous Mobile Network,” *IEICE Trans. Commun.*, Vol. E98-B, No. 10, pp. 1969–1977, Oct. 2016.

KIYASU-Zen’iti Award

Winner: Tatsuaki Okamoto, NTT Secure Platform Laboratories, and Katsuyuki Takashima, Information Technology R&D Center, Mitsubishi Electric Corporation

Date: June 1, 2017

Organization: IEICE

For “Adaptively Attribute-Hiding (Hierarchical) Inner Product Encryption.”

Published as: T. Okamoto and K. Takashima, “Adaptively Attribute-Hiding (Hierarchical) Inner Product Encryption,” *IEICE Trans. Fundamentals.*, Vol. E99-A, No. 1, pp. 92–117, Jan. 2016.

Outstanding Paper Award 2016

Winner: Hiroaki Kikuchi, Meiji University, and Katsumi Takahashi,

NTT Secure Platform Laboratories

Date: June 2, 2017

Organization: IPSJ

For “Zipf Distribution Model for Quantifying Risk of Re-identifi-

cation from Trajectory Data.”

Published as: H. Kikuchi and K. Takahashi, “Zipf Distribution Model for Quantifying Risk of Re-identification from Trajectory Data,” J. Info. Process, Vol. 24, No. 5, pp. 816–823, Sept. 2016.

Papers Published in Technical Journals and Conference Proceedings

Visual Wetness Perception Based on Image Color Statistics

M. Sawayama, E. H. Adelson, and S. Nishida

Journal of Vision, Vol. 17, No. 5, May 2017.

Color vision provides humans and animals with the abilities to discriminate colors based on the wavelength composition of light and to determine the location and identity of objects of interest in cluttered scenes (e.g., ripe fruit among foliage). However, we argue that color vision can inform us about much more than color alone. Since a trichromatic image carries more information about the optical properties of a scene than a monochromatic image does, color can help us recognize complex material qualities. Here we show that human vision uses color statistics of an image for the perception of an ecologically important surface condition, i.e., wetness. Psychophysical experiments showed that overall enhancement of chromatic saturation, combined with a luminance tone change that increases the darkness and glossiness of the image, tended to make dry scenes look wetter. Theoretical analysis along with image analysis of real objects indicated that our image transformation, which we call the wetness enhancing transformation (WET), is consistent with actual optical changes produced by surface wetting. Furthermore, we found that the WET operator was more effective for the images with many colors (large hue entropy) than for those with few colors (small hue entropy).

The hue entropy may be used to separate surface wetness from

other surface states having similar optical properties. While surface wetness and surface color might seem to be independent, there are higher order color statistics that can influence wetness judgments, in accord with the ecological statistics. The present findings indicate that the visual system uses color image statistics in an elegant way to help estimate the complex physical status of a scene.

Metal-organic Vapor-phase Epitaxy of InP-based HEMT Structures with InAs/In_{0.8}Ga_{0.2}As/In_{0.53}Ga_{0.47}As Composite Channel

H. Sugiyama, T. Hoshi, A. El Moutaouakil, and H. Matsuzaki

The 29th International Conference on Indium Phosphide and Related Materials (IPRM 2017), Berlin, Germany, May 2017.

InP-based high electron mobility transistor (HEMT) structures with an InAs/In_{0.8}Ga_{0.2}As/In_{0.53}Ga_{0.47}As composite channel were successfully fabricated by metal-organic vapor-phase epitaxy (MOVPE). We managed to grow highly strained channels at a low temperature of 440°C. In practical ultra-high-speed HEMT structures with 9-nm barrier-spacer layers, high mobility of around 17,000 cm²/Vs with a sheet carrier concentration of around 2.5×10¹² cm⁻² was obtained at room temperature.