External Awards

DICOMO 2020 Outstanding Paper Award
Winners: Arisa Yamauchi, Toshiki Onishi, Yuta Muto, Nihon University; Ryo Ishii, Yushi Aono, NTT Media Intelligence Laboratories; Akihiro Miyata, Nihon University
Date: October 7, 2020
Organization: Information Processing Society of Japan (IPSJ) and Multimedia, Distributed, Cooperative, and Mobile (DICOMO) 2020 Symposium

For "Study on a System for Rating Praising Behavior by Analysing Voice and Nonverbal Behavior."
Published as: A. Yamauchi, T. Onishi, Y. Muto, R. Ishii, Y. Aono, and A. Miyata, "Study on a System for Rating Praising Behavior by Analysing Voice and Nonverbal Behavior," Proc. of DICOMO 2020, Vol. 2020, pp. 98–106, June 2020.

Best Social Impact Paper Award
Winners: Hiromi Narimatsu, Hiroaki Sugiyama, Masahiro Mizukami, and Tsunehiro Arimoto, NTT Communication Science Laboratories
Date: January 8, 2021
Organization: The Sixth Linguistic and Cognitive Approaches to Dialog Agents (LaCATODA 2020)

For "Rationale for Using Chat-oriented Dialogue System's Experience to Convey Empathy."
Published as: H. Narimatsu, H. Sugiyama, M. Mizukami, and T. Arimoto, "Rationale for Using Chat-oriented Dialogue System's Experience to Convey Empathy," LaCATODA 2020, Jan. 2021.

IPSJ Journal Specially Selected Paper
Winners: Ryo Ishii, NTT Media Intelligence Laboratories; Kazuhiro Otsuka, Yokohama National University; Shiro Kumano and Ryuichiro Higashinaka, NTT Communication Science Laboratories; Yuji Aono, NTT Media Intelligence Laboratories
Date: January 15, 2021
Organization: IPSJ

For "Estimation of Personal Empathy Skill Level Using Dialogue Act and Eye-gaze during Turn-keeping/changing."
Published as: R. Ishii, K. Otsuka, S. Kumano, R. Higashinaka, and Y. Aono, "Estimation of Personal Empathy Skill Level Using Dialogue Act and Eye-gaze during Turn-keeping/changing," IPSJ Journal, Vol. 62, No. 1 pp. 100–114, Jan. 2021.

Kenjiro Takayanagi Achievement Award
Winner: Hiroshi Sawada, NTT Communication Science Laboratories
Date: January 20, 2021
Organization: Kenjiro Takayanagi Foundation

For his research on blind source separation of audio signals.

Certificate of Contributions
Winner: Seishi Takamura, NTT Media Intelligence Laboratories
Date: January 21, 2021
Organization: 13th International Conference on Knowledge and Smart Technology (KST 2021)

For his contribution to the quality of KST 2021 by delivering a keynote lecture entitled "The Latest Advances in Video Coding Technology for Next Generation Communications."

Promotion and Nurturing of Female Researchers Contribution Award
Winner: Makoto Takamura, NTT Basic Research Laboratories
Date: February 1, 2021
Organization: The Japan Society of Applied Physics

For her research on functional devices based on large-scale graphene.

Network Systems Research Award
Winners: Kotaro Matsuda, Hiroki Ikeuchi, Yousuke Takahashi, Tsuyoshi Toyono, NTT Network Technology Laboratories
Date: Mar. 4, 2021
Organization: The Institute of Electronics, Information and Communication Engineers (IEICE) Technical Committee on Network Systems

For "People Flow Reconstruction Based on Anonymous Sensor Data toward Smart City Infrastructure for Estimating Infection Route."
Published as: K. Matsuda, H. Ikeuchi, Y. Takahashi, and T. Toyono, "People Flow Reconstruction Based on Anonymous Sensor Data toward Smart City Infrastructure for Estimating Infection Route," IEICE Tech. Rep., Vol. 120, No. 297, NS2020-103, pp. 85–90, Dec. 2020.

Information Networks Research Award
Winners: Kengo Tajiri, NTT Network Technology Laboratories; Ryoichi Kawahara, Toyo University
Date: Mar. 4, 2021
Organization: IEICE Technical Committee on Information Networks

For "Theoretical Evaluation of Processing Performance and Accuracy of Machine Learning with Edge Cloud Cooperation."
Published as: K. Tajiri and R. Kawahara, "Theoretical Evaluation of Processing Performance and Accuracy of Machine Learning with Edge Cloud Cooperation," IEICE Tech. Rep., Vol. 120, No. 163, IN2020-23, pp. 7–12, Sept. 2020.

Papers Published in Technical Journals and Conference Proceedings

Formant-altered Auditory Feedback on Non-native Vowel Production

S. Hiroya and T. Mochida

12th International Seminar on Speech Production (ISSP 2020), Online conference, December 2020.

In this study, we conducted a formant-altered auditory feedback experiment for native Japanese speakers, which converts the vowels of English syllable “had” or Japanese mora “ha” to English vowel sounds [æ]. Results showed that the formant frequencies significantly changed in “had,” but that no significant changes were observed in “ha.” Our results suggested that speaking a non-native language may be more affected by auditory feedback than native language.

Classically Simulating Quantum Circuits with Local Depolarizing Noise

Y. Takahashi, Y. Takeuchi, and S. Tani

24th Annual Conference on Quantum Information Processing (QIP 2021), Online conference, February 2021.

We study the effect of noise on the classical simulatability of quantum circuits defined by computationally tractable (CT) states and efficiently computable sparse (ECS) operations. Examples of such circuits, which we call CT-ECS circuits, are instantaneous quantum polynomial-time (IQP), Clifford Magic, and conjugated Clifford circuits. This means that there exist various CT-ECS circuits such that their output probability distributions are anti-concentrated and not classically simulatable in the noise-free setting (under plausible assumptions). First, we consider a noise model where a depolarizing channel with an arbitrarily small constant rate is applied to each qubit at the end of computation. We show that, under this noise model, if an approximate value of the noise rate is known, any CT-ECS circuit with an anti-concentrated output probability distribution is classically simulatable. This indicates that the presence of small noise drastically affects the classical simulatability of CT-ECS circuits. Then, we consider an extension of the noise model where the noise rate can vary with each qubit, and provide a similar suffcient condition for classically simulating CT-ECS circuits with anti-concentrated output probability distributions.
