Dr. Naoki Ishikawa

Personal Data

Nationality:	Japan
Date of Birth:	17 March 1991
Membership:	Member of IEEE and IEICE.
Society:	IEEE ComSoc, IEEE VTS, IEICE CS.
Address:	3-4-1, Ohzuka-higashi, Asaminami-ku, Hiroshima-shi, Japan.
Email and Web:	contact@ishikawa.cc | http://ishikawa.cc

Education

Mar 2017 — Ph.D. in Electronic and Information Engineering
Tokyo University of Agriculture and Technology, Tokyo, Japan
Supervisor: Dr. Shinya Sugiura and Dr. Keiichi Kaneko

Mar 2015 — Master of Engineering in Computer and Information Sciences (Hons.)
Tokyo University of Agriculture and Technology, Tokyo, Japan
GPA: 3.90 / 4.00 | Earned 40 credits (30 credits are required for graduation)

Mar 2014 — Bachelor of Engineering in Computer and Information Sciences (Hons.)
Tokyo University of Agriculture and Technology, Tokyo, Japan
GPA: 3.56 / 4.00 | Earned 156 credits (128 credits are required for graduation)

Research Experience

Apr 2017 – current | Assistant Professor
Hiroshima City University

Apr 2016 – Mar 2017 | Research Fellow (DC2)
Japan Society of the Promotion of Science

Nov 2013 – Mar 2016 | Research Assistant
Tokyo University of Agriculture and Technology

Jun 2015 – Sep 2015 | Academic Visitor
The wireless communications group headed by Prof. Lajos Hanzo, School of Electronics and Computer Science, University of Southampton, United Kingdom.

May 2013 – Aug 2014 | Research Assistant
The human-computer interaction research group headed by Associate Prof. Satoshi Nakamura, School of Interdisciplinary Mathematical Sciences, Meiji University, Nakano-ku, Tokyo, Japan.

Apr 2012 – Mar 2013 | Research Assistant
The user interface research project funded by Japan Science and Technology Agency (JST). The project was called JST ERATO IGARASHI Design UI Project and was at Bunkyo-ku, Tokyo, Japan. My supervisor was Dr. Kaeita Watanabe.

Academic Service

Reviewer (journal / A to Z)

- EURASIP Journal on Wireless Communications and Networking (1 paper)
- IEEE Access (8 papers)
- IEEE Communications Letters (19 papers)
- IEEE Communications Magazine (3 papers)
- IEEE Journal of Selected Topics in Signal Processing (1 paper)
- IEEE Journal on Selected Areas in Communications (2 papers)
- IEEE Journals on Selected Areas in Communications (1 paper)
- IEEE Signal Processing Letters (1 paper)
- IEEE Transactions on Communications (13 papers)
- IEEE Transactions on Industrial Electronics (1 paper)
- IEEE Transactions on Vehicular Technology (20 papers)
- IEEE Transactions on Wireless Communications (8 papers)
- IEEE Wireless Communications Letters (9 papers)
- IEICE Transactions on Communications (6 papers)
- IET Communications (2 papers)
- IET Wireless Sensor Systems (1 paper)

Reviewer (conference)

- IEEE ICC Workshop 2017, ICC 2019
- IEEE Globecom 2016, IEEE Globecom 2018
- IEEE Wireless Communications and Networking Conference (WCNC) 2018
- IEEE Vehicular Technology Conference (VTC) 2015-Spring, VTC2015-Fall, IEEE VTC2018-Fall, IEEE VTC2018-Fall, IEEE VTC2018-Fall, IEEE VTC2019-Spring, IEEE VTC2019-Spring, IEEE VTC2019-Spring, IEEE VTC2020-Spring, IEEE VTC2020-Spring
- International Wireless Communications and Mobile Computing Conference (IWCMC)
- International Conference on Internet of Things, Embedded Systems and Communications (IINTEC) 2018

Awards

Apr 2018 | IEEE Transactions on Communications Exemplary Reviewer 2017
Recipient: Naoki Ishikawa
Awarded by: IEEE Transactions on Communications

Mar 2018 | Yasujiro Niwa Outstanding Paper Award
Recipient: Naoki Ishikawa and Shinya Sugiura
Awarded by: Tokyo Denki University
Competition rate: three nominations out of 14 submissions

Apr 2016 | Outstanding Student Research Award
Recipient: Naoki Ishikawa

Awarded by: Tokyo University of Agriculture and Technology
Competition rate: 11 nominations out of 1028 students in the faculty of engineering

Mar 2015 | Telecom System Technology Student Award (honorable mention)
Recipient: Naoki Ishikawa and Shinya Sugiura
Awarded by: Telecommunications Advancement Foundation of Japan
Competition rate: six nominations out of 19 submissions

Mar 2015 | Outstanding Student Research Award
Recipient: Naoki Ishikawa
Awarded by: Tokyo University of Agriculture and Technology
Competition rate: six nominations out of 453 graduate students in the faculty of engineering

Mar 2015 | Best Research Award (Atouda Prize)
Recipient: Naoki Ishikawa
Awarded by: Department of Computer and Information Sciences, Tokyo University of Agriculture and Technology.
Competition rate: one nomination out of 40 graduate students in the department

Jan 2015 | Outstanding Paper Award for Young C&C Researchers
Recipient: Naoki Ishikawa and Shinya Sugiura
Awarded by: NEC Computer and Communications Foundation
Competition rate: over the past 14 years there have been 17 nominations out of 2250 candidates

May 2014 | Young Researcher's Encouragement Award
Recipient: Naoki Ishikawa and Shinya Sugiura
Awarded by: IEEE Vehicular Technology Society Japan Chapter
Competition rate: all student papers accepted by IEEE VTC were nominated. Our paper was ranked third out of 12 nominated papers.

Mar 2014 | Outstanding Student Award
Recipient: Naoki Ishikawa
Awarded by: Tokyo University of Agriculture and Technology
Competition rate: one nomination out of 88 graduate students in the department

Scholarships

Apr 2016 – Mar 2017 | Research Fellowship for Young Japanese Scientists
Sponsored by: Japan Society for the Promotion of Science
Competition rate: 191 students were nominated out of 860 submissions in Engineering

Jun 2015 – Sep 2015 | TOBITATE! Young Ambassador Program
Sponsored by: Japan Student Services Organization (JASSO) and Ministry of Education, Culture, Sports, Science and Technology (MEXT)
Competition rate: 256 students were nominated out of 784 submissions

Apr 2015 – Mar 2018 | Ph.D. Research Encouragement Scholarship
Sponsored by: Support Center for Advanced Telecommunications Technology Research Foundation
Competition rate: not yet public

Apr 2014 – Mar 2015 | Repayment Exemption for students who have achieved outstanding records

Sponsored by: Japan Student Services Organization (JASSO)
Competition rate: not yet public

May 2014 | Grants for Researchers Attending International Conferences
Sponsored by: NEC Computer and Communications Foundation
Competition rate: not yet public

Mar 2011 – 2014 | Outstanding Student Scholarship
Sponsored by: Tokyo University of Agriculture and Technology
Competition rate: the top few percent of students were nominated based on GPA

Language Skills

Japanese: Native
English: Advanced
Chinese: Beginner

Computer Skills

I have professional skills in computer programming. In particular, I can design large-scale projects with object-oriented programming, and can build up a fundamental computing library from scratch. I have approximately 10 to 15 years' experience in C, C++, Java, R, Ruby, JavaScript, (X)HTML, and Common Lisp. Also, I have 1 years' experience in PHP, SQL, Basic, C#, Objective-C, Delphi, Scheme, and Prolog. I use Windows, Mac, and Linux daily. Examples of the systems and applications I have implemented are listed on my web page.

Certifications

Mar 2013 | TOEIC Score 820 / 990
Certificated by: Educational Testing Service

Spring 2008 | Applied Information Technology Engineer
Certificated by: Information-technology Promotion Agency of Japan

Autumn 2007 | Fundamental Information Technology Engineer
Certificated by: Information-technology Promotion Agency of Japan

Publications

Ph.D. Thesis

1. Naoki Ishikawa, "Space-, time-, and frequency-domain permutation modulation designed for microwave and optical wireless communications," Tokyo University of Agriculture and Technology, February 2017.

First-authored IEEE journal (refereed)

1. Naoki Ishikawa, Rakshith Rajashekar, Chao Xu, Mohammed El-Hajjar, Shinya Sugiura, Lie-Liang Yang, and Lajos Hanzo, "Differential-detection aided large-scale generalized spatial modulation is capable of operating in high-mobility millimeter-wave channels," IEEE Journal of Selected Topics in Signal Processing, in press.
2. Naoki Ishikawa, "IMToolkit: An open-source index modulation toolkit for reproducible research based on massively parallel algorithms," IEEE Access, vol. 7, pp. 93830–93846, July 2019.

3. Naoki Ishikawa, Yasuhiro Ohishi, and Kaori Maeda, "Nulls in the air: Passive and low-complexity QoS estimation method for a large-scale Wi-Fi network based on null function data frames," IEEE Access, vol. 7, pp. 28581–28591, February 2019.
4. Naoki Ishikawa, Rakshith Rajashekar, Chao Xu, Shinya Sugiura, and Lajos Hanzo, "Differential space-time coding dispensing with channel-estimation approaches the performance of its coherent counterpart in the open-loop massive MIMO-OFDM downlink," IEEE Transactions on Communications, vol. 66, no. 12, pp. 6190–6204, December 2018.
5. Naoki Ishikawa, Shinya Sugiura, and Lajos Hanzo, "50 years of permutation, spatial and index modulation: From classic RF to visible light communications and data storage," IEEE Communications Surveys and Tutorials, vol. 20, no. 3, pp. 1905–1938, March 2018.
6. Naoki Ishikawa and Shinya Sugiura, "Rectangular differential spatial modulation for open-loop noncoherent massive-MIMO downlink," IEEE Transactions on Wireless Communications, vol. 16, no. 3, pp. 1908–1920, March 2017.
7. Naoki Ishikawa, Rakshith Rajashekar, Shinya Sugiura, and Lajos Hanzo, "Generalized spatial modulation based reduced-RF-chain millimeter-wave communications," IEEE Transactions on Vehicular Technology, vol. 66, no. 1, pp. 879–883, January 2017.
8. Naoki Ishikawa, Shinya Sugiura, and Lajos Hanzo, "Subcarrier-index modulation aided OFDM – will it work?," IEEE Access, vol. 4, pp. 2580–2593, May 2016.
9. Naoki Ishikawa and Shinya Sugiura, "Maximizing constrained capacity of power-imbalanced optical wireless MIMO communications using spatial modulation," Journal of Lightwave Technology, vol. 33, no. 2, pp. 519–527, January 2015.
10. Naoki Ishikawa and Shinya Sugiura, "Unified differential spatial modulation," IEEE Wireless Communications Letters, vol. 3, no. 4, pp. 337–340, August 2014.

Co-authored IEEE journal (refereed)

1. Rakshith Rajashekar, Chao Xu, Naoki Ishikawa, Lie-Liang Yang, and Lajos Hanzo, "Subcarrier subset selection aided transmit precoding achieves full-diversity in index modulation," IEEE Transactions on Vehicular Technology, in press.
2. Chao Xu, Naoki Ishikawa, Rakshith Rajashekar, Shinya Sugiura, Robert G. Maunder, Zhaocheng Wang, Lie-Liang Yang, and Lajos Hanzo, "Sixty Years of Coherent Versus Non-Coherent Tradeoffs and the Road From 5G to Wireless Futures," IEEE Access, vol. 7, pp. 178246–178299, December 2019.
3. Chao Xu, Peichang Zhang, Rakshith Rajashekar, Naoki Ishikawa, Shinya Sugiura, Zhaocheng Wang, and Lajos Hanzo, ""Near-perfect" finite-cardinality generalized space-time shift keying," IEEE Journal on Selected Areas in Communications, vol. 37, no. 9, pp. 2146–2164, September 2019.
4. Rakshith Rajashekar, Chao Xu, Naoki Ishikawa, Lie-Liang Yang, and Lajos Hanzo, "Multicarrier division duplex aided millimeter wave communications," IEEE Access, vol. 7, pp. 100719–100732, July 2019.
5. Chao Xu, Peichang Zhang, Rakshith Rajashekar, Naoki Ishikawa, Shinya Sugiura, Li Wang, and Lajos Hanzo, "Finite-cardinality single-RF differential space-time modulation for improving the diversity-throughput tradeoff," IEEE Transactions on Communications, vol. 67, no. 1, pp. 318–335, January 2019.
6. Chao Xu, Rakshith Rajashekar, Naoki Ishikawa, Shinya Sugiura, and Lajos Hanzo, "Single-RF index shift keying aided differential space-time block coding," IEEE Transactions on Signal Processing, vol. 66, no. 3, pp. 773–788, February 2018.

7. Rakshith Rajashekar, Chao Xu, Naoki Ishikawa, Shinya Sugiura, K. V. S. Hari, and Lajos Hanzo, "Algebraic differential spatial modulation is capable of approaching the performance of its coherent counterpart," IEEE Transactions on Communications, vol. 65, no. 10, pp. 4260–4273, October 2017.
8. Rakshith Rajashekar, Naoki Ishikawa, Shinya Sugiura, K. V. S. Hari, and Lajos Hanzo, "Full-diversity dispersion matrices from algebraic field extensions for differential spatial modulation," IEEE Transactions on Vehicular Technology, vol. 66, no. 1, pp. 385–394, January 2017.

International conference (oral / refereed)

1. Naoki Ishikawa and Shinya Sugiura, "EXIT-chart-based design of irregular-precoded power-imbalanced optical spatial modulation," IEEE 82nd Vehicular Technology Conference (VTC Fall), Boston, USA, September 2015.
2. Naoki Ishikawa and Shinya Sugiura, "Single- and multiple-RF aided non-coherent generalized spatial modulation," IEEE 79th Vehicular Technology Conference (VTC Spring), Seoul, Korea, May 2014.