Hiromu Yakura

General Information

Place:	Tokyo, Japan
Email:	hiromu1996@gmail.com
Web:	http://yumetaro.info
Date of Birth:	13 September, 1996
Research Interest:	Human-Computer Interaction, Machine Learning, Music Information Retrieval, Computer Security
Languages:	Japanese (native), English (business)

Education

Mar 2021 — Master of Engineering, **University of Tsukuba**, Tsukuba, Japan
- Thesis: *Peripheral Intelligent Interaction: A novel interaction design presenting media contents to the peripheral area of a user's consciousness with machine learning*
- Advisor: Prof. Masataka Goto

Mar 2019 — Bachelor of Information Engineering, **University of Tsukuba**, Tsukuba, Japan
- Thesis: *Audio Adversarial Example for Over-the-Air Attack against Speech Recognition Systems*
- Advisor: Prof. Jun Sakuma
- GPA: 4.12 / 4.3

Mar 2015 — High School Diploma, **Nada High School**, Kobe, Japan

Academic Experience

Present – Apr 2019 — Media Interaction Group, AIST, Tsukuba, Japan
Student Researcher
Working with Dr. Masataka Goto.

Mar 2019 – Nov 2017 — Center of Advanced Intelligence Project, RIKEN, Tokyo, Japan
Student Researcher
Worked with Prof. Jun Sakuma.

Mar 2019 – May 2015 — Media Interaction Group, AIST, Tsukuba, Japan
Intern Student
Worked with Dr. Masataka Goto and Dr. Tomoyasu Nakano.

Industry Experience

Mar 2021 – Nov 2015 — Teambox Inc., Tokyo, Japan
Chief Technology Officer
Led development teams of Web applications and analysis systems for providing training programs in human resource development. Also, led research projects to be published as academic papers at ACM CHI '19 and '20, which have been integrated in production systems.

Oct 2015 – Jan 2015 — Teambox Inc., Tokyo, Japan
Technologist
Developed Web and iOS applications for providing training programs in human resource development.

Grants

Mar 2023 Oct 2020	Japan Science and Technology Agency – ACT-X **$45,000**
Aug 2022 Oct 2021	Microsoft Research PhD Fellowship **$10,000**
Aug 2021 Oct 2020	Google PhD Fellowship **$10,000**
Dec 2013 Jun 2013	SUGOUDE IT Super Engineer Support Program **$20,000**
Aug 2012 Feb 2012	Japan Information-technology Promotion Agency – Mitou Program **$12,000** (Youngest selection)

Publications

Refereed Journal Papers

Jan 2023	Riku Arakawa, Hiromu Yakura, Vimal Mollyn, Suzanne Nie, Emma Russell, Dustin Demeo, Haarika Reddy, Alexander Maytin, Bryan Carroll, Jill Fain Lehman, and Mayank Goel: "PrISM-Tracker: A Framework for Multimodal Procedure Tracking using Wearable Sensors and State Transition Information with User-Driven Handling of Errors and Uncertainty," *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies*, Vol. 6, No. 4 (Invited to **ACM UbiComp 2023**), pp. 156:1–156:27.
May 2022	Hiromu Yakura, Tomoyasu Nakano, and Masataka Goto: "An Automated System Recommending Background Music to Listen to While Working," *User Modeling and User-Adapted Interaction*, Vol. 32, pp. 355-388, (IF 4.682).
Apr 2022	Hiromu Yakura, Kento Watanabe, and Masataka Goto: "Self-Supervised Contrastive Learning for Singing Voices," *IEEE/ACM Transactions on Audio, Speech, and Language Processing*, Vol. 30, pp. 1614–1623, (IF 3.919).
Apr 2021	Riku Arakawa* and Hiromu Yakura* (*equal contribution*): "Reaction or Speculation: Building Computational Support for Users in Catching-Up Series Based on an Emerging Media Consumption Phenomenon," *Proceedings of the ACM on Human-Computer Interaction*, Vol. 5, No. CSCW1 (Invited to **ACM CSCW 2021**), pp. 151:1–151:28.
Nov 2019	Hiromu Yakura, Shinnosuke Shinozaki, Reon Nishimura, Yoshihiro Oyama, and Jun Sakuma: "Neural Malware Analysis with Attention Mechanism," *Computers & Security*, Vol. 87, No. 101592, (IF 3.062).

Peer-Reviewed Conference Papers

Dec 2022	Yuki Koike, Hiroyuki Katsura, Hiromu Yakura, and Yuma Kurogome: "SLOPT: Bandit Optimization Framework for Mutation-Based Fuzzing," In *Proceedings of the 38th Annual Computer Security Applications Conference* (**ACSAC 2022**), pp. 519–533, (acceptance rate: 24.1%).

Apr 2022	Riku Arakawa*, Hiromu Yakura*, and Sosuke Kobayashi (*equal contribution*): "VocabEncounter: NMT-powered Vocabulary Learning by Presenting Computer-Generated Usages of Foreign Words into Users' Daily Lives," In *Proceedings of the 2022 ACM SIGCHI Conference on Human Factors in Computing Systems* (**ACM CHI 2022**), No. 6, (acceptance rate: 24.7%).
Mar 2022	Riku Arakawa*, Hiromu Yakura*, and Masataka Goto (*equal contribution*): "BeParrot: Efficient Interface for Transcribing Unclear Speech via Respeaking," In *Proceedings of the 27rd ACM International Conference on Intelligent User Interface* (**ACM IUI 2022**), pp. 832–840, (acceptance rate: 24.5%).
Aug 2021	Hiromu Yakura, Yuki Koyama, and Masataka Goto: "Tool- and Domain-Agnostic Parameterization of Style Transfer Effects Leveraging Pretrained Perceptual Metrics," In *Proceedings of the 30th International Joint Conference on Artificial Intelligence* (**IJCAI 2021**), pp. 1208–1216, (acceptance rate: 13.9%).
Apr 2021	Hiromu Yakura: "No More Handshaking: How have COVID-19 pushed the expansion of computer-mediated communication in Japanese idol culture?," In *Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems* (**ACM CHI 2021**), No. 645, (acceptance rate: 26.3%).
Apr 2021	Riku Arakawa* and Hiromu Yakura* (*equal contribution*): "Mindless Attractor: A False-Positive Resistant Intervention for Drawing Attention Using Auditory Perturbation," In *Proceedings of the 2021 ACM SIGCHI Conference on Human Factors in Computing Systems* (**ACM CHI 2021**), No. 99, (acceptance rate: 26.3%).
Nov 2020	Hiromu Yakura and Masataka Goto: "Enhancing Participation Experience in VR Live Concerts by Improving Motions of Virtual Audience Avatars," In *Proceedings of the 19th IEEE International Symposium on Mixed and Augmented Reality* (**IEEE ISMAR 2020**), pp. 555–565, (acceptance rate: 28.8%).
Oct 2020	Riku Arakawa* and Hiromu Yakura* (*equal contribution*): "Mimicker-in-the-Browser: A Novel Interaction Using Mimicry to Augment the Browsing Experience," In *Proceedings of the 22nd ACM International Conference on Multimodal Interaction* (**ACM ICMI 2020**), pp. 351–360, (acceptance rate: 37.6%).
Apr 2020	Riku Arakawa* and Hiromu Yakura* (*equal contribution*): "INWARD: A Computer-Supported Tool for Video-Reflection Improves Efficiency and Effectiveness in Executive Coaching," In *Proceedings of the 2020 ACM SIGCHI Conference on Human Factors in Computing Systems* (**ACM CHI 2020**), No. 574, (acceptance rate: 24.3%).
Apr 2020	Hiromu Yakura, Youhei Akimoto, and Jun Sakuma: "Generate (non-software) Bugs to Fool Classifiers," In *Proceedings of the 34th AAAI Conference on Artificial Intelligence* (**AAAI 2020**), pp. 1070–1078, (acceptance rate: 20.6%).
Mar 2019	Hiromu Yakura and Jun Sakuma: "Robust Audio Adversarial Example for a Physical Attack," In *Proceedings of the 28th International Joint Conference on Artificial Intelligence* (**IJCAI 2019**), pp. 5334–5441, (acceptance rate: 17.9%).

May 2019 | Riku Arakawa* and Hiromu Yakura* (*equal contribution*):
"REsCUE: A framework for REal-time feedback on behavioral CUEs using multi-modal anomaly detection[1],"
In *Proceedings of the 2019 ACM CHI Conference on Human Factors in Computing Systems* (**ACM CHI 2019**), No. 572, (acceptance rate: 23.8%).

Mar 2018 | Hiromu Yakura, Shinnosuke Shinozaki, Reon Nishimura, Yoshihiro Oyama, and Jun Sakuma:
"Malware Analysis of Imaged Binary Samples by Convolutional Neural Network with Attention Mechanism,"
In *Proceedings of the 8th ACM Conference on Data and Application Security and Privacy* (**ACM CODASPY 2018**), pp. 127–134, (acceptance rate: 31.8%).

Mar 2018 | Hiromu Yakura, Tomoyasu Nakano, and Masataka Goto:
"FocusMusicRecommender: A System for Recommending Music to Listen to While Working,"
In *Proceedings of the 23rd ACM International Conference on Intelligent User Interface* (**ACM IUI 2018**), pp. 7–18, (acceptance rate: 22.9%).

Peer-Reviewed Conference Posters

Mar 2018 | Hiromu Yakura, Shinnosuke Shinozaki, Reon Nishimura, Yoshihiro Oyama, and Jun Sakuma:
"Malware Analysis of Imaged Binary Samples by Convolutional Neural Network with Attention Mechanism,"
In *Proceedings of the 10th ACM Workshop on Artificial Intelligence and Security* (**ACM AISec 2017**), pp. 55–56, (acceptance rate: 38.9%).

Peer-Reviewed Workshop Papers

Aug 2022 | Riku Arakawa* and Hiromu Yakura* (*equal contribution*):
"Human-AI communication for human-human communication: Applying interpretable unsupervised anomaly detection to executive coaching,"
In *Proceedings of the IJCAI 2022 Workshop on the Communication in Human-AI Interaction*, (**IJCAI CHAI 2022**), 6 pages.

Apr 2022 | Riku Arakawa* and Hiromu Yakura* (*equal contribution*):
"AI for human assessment: What do professional assessors need?,"
In *Proceedings of the ACM CHI 2022 Workshop on the Trust and Reliance in AI-Human Teams*, (**CHI TRAIT 2022**), 6 pages.

Patents

Apr 2022 | Vocabulary learning support system and program, **JP 2022-068248**.

Apr 2022 | Information processing program, equipment, and system, **JP 2022-066699**.

Mar 2022 | System and program, **JP 2022-036531**.

Jun 2021 | Information processing equipment, **JP 2021-108369**.

Dec 2018 | Monitoring equipment, system, method, and program, **JP 2018-226486 (6867701)**.

Feb 2015 | Evaluation support system, **JP 2015-020732 (6469466)**.

Academic Services

Program Committee

- ACM SIGCHI Conference on Human Factors in Computing Systems 2021 – Late-Breaking Work

[1] These researches were conducted as an independent project by two undergraduate students.

External Reviewer

- ACM SIGCHI Conference on Human Factors in Computing Systems 2021, 2022, 2023
- ACM Conference on Computer-Supported Cooperative Work and Social Computing 2021, 2022
- Artificial Intelligence Review
- Computers & Security
- IEEE MultiMedia
- IEEE Transactions on Artificial Intelligence
- IEEE Transactions on Cognitive Communications and Networking
- IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems
- IEEE Transactions on Dependable and Secure Computing
- Journal of Information Security and Applications
- The Computer Journal

Selected Awards and Honors

Oct 2022	TOME R&D Inc.: **Research Award for Young Researchers** Awarded for "Self-Supervised Contrastive Learning for Singing Voices."
Sep 2022	IPSJ SIGMUS Summer Symposium: **Best Presentation (Best Research) Award** Awarded for "Self-Supervised Contrastive Learning for Singing Voices."
Mar 2022	Telecommunication Advancement Foundation: **Telecom Humanities and Social Sciences Student Paper Award** Awarded for "Self-Supervised Contrastive Learning for Singing Voices."
Apr 2021	ACM CHI 2021: **Best Paper Honorable Mention** Awarded for "Mindless Attractor" (top: 5%).
Mar 2021	University of Tsukuba: **President's List** Selected as 10 outstanding students among about 2,200 graduates of 2021.
Mar 2020	Information Processing Society of Japan (IPSJ): **Yamashita Research Award** Awarded for "Robust Audio Adversarial Example for a Physical Attack."
Mar 2019	University of Tsukuba: **President's List** Selected as 10 outstanding students among about 2,300 graduates of 2019.
Mar 2019	Japan Society of Security Management: **Tsujii Shigeo Security Paper Award** Awarded for "Neural Malware Analysis with Attention Mechanism."
Oct 2018	IPSJ Computer Security Symposium: **Best Paper Award** Awarded for "Robust Audio Adversarial Example for a Physical Attack."
Oct 2017	IPSJ Computer Security Symposium: **Best Paper Award** Awarded for "Neural Malware Analysis with Attention Mechanism."
Jan 2017	SECCON CTF Final (Rank: **3rd**): **Minister of Education, Culture, Sports, Science and Technology Award** Participated as a team "dododododo."
Sep 2016	Data Science Game Final (Rank: **6th**) Participated as a team "Melting."
Aug 2016	IPSJ SIGMUS Summer Symposium: **Best Student Research Award and Best Presentation Award** Awarded for "FocusMusicRecommender."

Jan 2016	SECCON CTF Final (Rank: **1st**): **Minister of Education, Culture, Sports, Science and Technology Award** Participated as a team "dododo."
Aug 2014	DEFCON CTF Final (Rank: **13th**) Participated as a team "binja."
May 2014	Intel International Science and Engineering Fair: **Fondazione Bruno Kessler Award** Awarded for the research of automated chorus section detection in music using metadata on the Web.
Apr 2014	CODEGATE Junior Final (Rank: **6th**) Participated as an individual player.
Dec 2013	Japan Science and Engineering Challenge: **Minister of State for Science and Technology Policy Award** Awarded for the research of automated chorus section detection in music using metadata the Web.
Oct 2013	U-20 Programming Contest: **Minister of Economy, Trade and Industry Award** Awarded for the development of an open-source learning platform for competitive programming.
Dec 2012	Japan Science and Engineering Challenge: **Minister of Education, Culture, Sports, Science and Technology Award** Awarded for the research of Android malware detection based on behavior history.
May 2012	Asia-Pacific Information Olympiad: **Bronze Medal** Participated as the Japan national team.

Computer Skills

Languages:	Python, C, C++, JavaScript, PHP, Swift, Objective-C, Kotlin, Bash, LaTeX
Platforms:	Web (backend/frontend/database), iOS, Linux (server/kernel), Mac
Design:	Adobe Illustrator, Adobe Photoshop, HTML/CSS