Kohei SAIJO

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Education

Waseda University   *Tokyo, Japan*
Ph.D. in Computer Science and Engineering   *April 2023 - Present*
- Supervisor: Tetsuji Ogawa
- Research topic: Unsupervised sound source separation

Waseda University   *Tokyo, Japan*
M.E. in Computer Science and Engineering   *April 2021 - March 2023*
- Supervisor: Tetsuji Ogawa
- Research topic: Unsupervised sound source separation

Waseda University   *Tokyo, Japan*
B.E. in Computer Science and Engineering   *April 2017 - March 2021*
- Supervisor: Tetsuji Ogawa
- Research topic: Multi-channel sound source separation

Work Experience

National Institute of Advanced Industrial Science and Technology   *Tokyo, Japan*
Mentor: Yoshiaki Bando   *October 2024 - Present*
- Research Assistant

Mitsubishi Electric Research Laboratories   *Cambridge, MA, USA*
Mentor: Jonathan Le Roux   *November 2023 - August 2024*
- Research Internship
- Worked on unsupervised speech separation [Saijo+, Interspeech2024], state-of-the-art speech separation model [Saijo+, IWAENC2024], text-queried target sound extraction [Saijo+, ICASSP2025], and unified source separation [Saijo+, ICASSP2025].

Carnegie Mellon University   *Pittsburgh, PA, USA*
Mentor: Shinji Watanabe   *April 2023 - July 2023*
- Visiting Scholar
- Worked on multi-task speech enhancement [Saijo+, ASRU2023]

LINE Corporation   *Tokyo, Japan*
Mentor: Robin Scheibler   *September 2021 - April 2022*
- Part-time researcher
- Worked on multi-channel unsupervised source separation [Saijo+, Interspeech2022]

LINE Corporation   *Tokyo, Japan*
Mentor: Robin Scheibler   *August 2021 - September2021*
- Research Internship
- Worked on multi-channel source separation and dereverberation [Saijo+, Interspeech2022]

Publication (First Author)

International Conference

- **Kohei Saijo**, Janek Ebbers, François G. Germain, Gordon Wichern, Jonathan Le Roux, "Task-Aware Unified Source Separation," In *2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April 2025 (to appear).

- **Kohei Saijo**, Janek Ebbers, François G. Germain, Sameer Khurana, Gordon Wichern, Jonathan Le Roux, "Leveraging Audio-Only Data for Text-Queried Target Sound Extraction," In *2025 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April 2025 (to appear).

- **Kohei Saijo**, Gordon Wichern, François G. Germain, Zexu Pan, Jonathan Le Roux, "TF-Locoformer: Transformer with Local Modeling by Convolution for Speech Separation and Enhancement," In *Proceedings of International Workshop on Acoustic Signal Enhancement (IWAENC)*, September 2024.

- **Kohei Saijo**, Gordon Wichern, François G. Germain, Zexu Pan, Jonathan Le Roux, "Enhanced Reverberation as Supervision for Unsupervised Speech Separation," In *Proceedings of 25th Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2024.

- **Kohei Saijo**, Wangyou Zhang, Zhong-Qiu Wang, Shinji Watanabe, Tetsunori Kobayashi, Tetsuji Ogawa, "A Single Speech Enhancement Model Unifying Dereverberation, Denoising, Speaker Counting, Separation, and Extraction," In *2023 IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, December 2023.

- **Kohei Saijo**, Tetsuji Ogawa, "Remixing-based Unsupervised Source Separation from Scratch," In *Proceedings of 24th Annual Conference of International Speech Communication Association (INTERSPEECH)*, August 2023.

- **Kohei Saijo**, Tetsuji Ogawa, "Self-Remixing: Unsupervised Speech Separation via Separation and Remixing," In *2023 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, June 2023.

- **Kohei Saijo**, Tetsuji Ogawa, "Unsupervised Training of Sequential Neural Beamformer Using Coarsely-separated and Non-separated Signals," In *Proceedings of 23rd Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2022.

- **Kohei Saijo**, Robin Scheibler, "Spatial Loss for Unsupervised Multi-channel Source Separation," In *Proceedings of 23rd Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2022.

- **Kohei Saijo**, Robin Scheibler, "Independence-based Joint Dereverberation and Separation with Neural Source Model," In *Proceedings of 23rd Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2022.

- **Kohei Saijo**, Tetsuji Ogawa, "Remix-Cycle-Consistent Learning on Adversarially Learned Separator for Accurate and Stable Unsupervised Speech Separation," In *2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, June 2022.

- **Kohei Saijo**, Kazuhiro Katagiri, Masaru Fujieda, Tetsunori Kobayashi, Tetsuji Ogawa, "Comparative Study on DNN-based Minimum Variance Beamforming Robust to Small Movements of Sound Sources," In *Proceedings of Asia-Pacific Signal and Information Processing Association Annual Summit and Conference 2021 (APSIPA)*, December 2021.

Publication (Co-author)

International Conference

- Zexu Pan, Gordon Wichern, François G. Germain, **Kohei Saijo**, Jonathan Le Roux, "PARIS: Pseudo-AutoRegressIve Siamese Training for Online Speech Separation," In *Proceedings of 25th Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2024.

- Wangyou Zhang, Robin Scheibler, **Kohei Saijo**, Samuele Cornell, Chenda Li, Zhaoheng Ni, Anurag Kumar, Jan Pirklbauer, Marvin Sach, Shinji Watanabe, Tim Fingscheidt, Yanmin Qian, "URGENT Challenge: Universality, Robustness, and Generalizability For Speech Enhancement," In *Proceedings of 25th Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2024.

- Wangyou Zhang, **Kohei Saijo**, Jee-weon Jung, Chenda Li, Shinji Watanabe, Yanmin Qian, "Beyond Performance Plateaus: A Comprehensive Study on Scalability in Speech Enhancement," In *Proceedings of 25th Annual Conference of International Speech Communication Association (INTERSPEECH)*, September 2024.

- Xuankai Chang, Brian Yan, Kwanghee Choi, Jee-weon Jung, Yichen Lu, Soumi Maiti, Roshan Sharma, Jiatong Shi, Jinchuan Tian, Shinji Watanabe, Yuya Fujita, Takashi Maekaku, Pengcheng Guo, Yao-Fei Cheng, Pavel Denisov, **Kohei Saijo**, Hsiu-Hsuan Wang, "Exploring Speech Recognition, Translation, and Understanding with Discrete Speech Units: A Comparative Study," In *2024 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, April 2024.

- Wangyou Zhang, **Kohei Saijo**, Zhong-Qiu Wang, Shinji Watanabe, Yanmin Qian, "Toward Universal Speech Enhancement For Diverse Input Conditions," In *IEEE Automatic Speech Recognition and Understanding Workshop (ASRU)*, December 2023.

- Riku Ogino, **Kohei Saijo**, Tetsuji Ogawa, "Design of Discriminators in GAN-Based Unsupervised Learning of Neural Post-Processors for Suppressing Localized Spectral Distortion," In *Proceedings of Asia-Pacific Signal and Information Processing Association Annual Summit and Conference 2022 (APSIPA)*, November 2022.

Awards

ISS Young Researcher's Award in Speech Field
from the Institute of Electronics, Information and Communication Engineers (IEICE)   *December 2023*

Best Student Presentation Award
from the Acoustical Society of Japan (ASJ)   *September 2022*

Grants

Research Fellowship for Young Scientists (DC2)
from Japan Society for the Promotion of Science (JSPS)   *April 2024 - March 2026*

Super Global University
from ICT & Robotics, Waseda University   *April 2023 - July 2023*

Support for Pioneering Research Initiated by the Next Generation (SPRING)
from Japan Science and Technology Agency (JST)   *April 2023 - March 2026*

Repayment Exemption for Graduate Students with Excellent Achievements (Type I; full-exemption)
from Japan Student Services Organization (JASSO)   *April 2021 - March 2023*

Skills

Natural language	Japanese (native), English (conversant)
Programming language	Python, C, Java, LaTeX