Masaki Kuribayashi

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Doctoral candidate at Waseda University with a focus on Human-Computer Interaction, particularly in developing assistive systems for visually impaired individuals. Passionate about AI-driven solutions, including visual language navigation models, robots, and smartphone-based systems to enhance user navigation experiences. Proven expertise in designing and developing these assistive technologies, with experience in user-centered participatory and co-design, large-scale user studies, and statistical analysis. Deeply interested in exploring cutting-edge AI models to further improve accessibility and human-technology interaction.

Education

Apr. 2023 - Current
Doctor of Engineering
Graduate School of Advanced Science and Engineering, Waseda University
Major: Human-Computer Interaction
Advisor: Shigeo Morishima

Apr. 2021 - Mar. 2023
Master of Engineering
Graduate School of Advanced Science and Engineering, Waseda University
Major: Human-Computer Interaction
Advisor: Shigeo Morishima

Apr. 2017 - Mar. 2021
Bachelor of Science
School of Advanced Science and Engineering, Department of Physics, Waseda University
Major: Theoretical Physics

Work Experience

Apr. 2023 - Current
Research Fellow DC1
JSPS Research Fellowship for Young Scientists
- Mentored five Bachelors and Masters students. Initiated their projects and led them to publish to well-known conferences such as CHI, MobileHCI, and Augmented Humans.
- Developed smartphone-based system for blind people to explore shopping mall, stand in lines and navigate indoor spaces.
- Conducted in-the-wild user studies at a public shopping mall and analyzed using statistical tests.
- Worked on visual language navigation (VLN) model by levearging large language models.
- Collected dataset and constructed virtual environment for VLN task.

Aug. 2024 - Current
Researcher (Internship Position)
Accessibility Lab, Miraikan - The National Museum of Emerging Science and Innovation
- Developed navigation robot for blind people to explore shopping malls and museums.
- Conducted in-the-wild user studies with 15 blind poeple in shopping malls and museums.

Jan. 2024 - May. 2024 **Visiting Researcher**
Human-to-Everything (H2X) Lab, Boston University
Advisor: Eshed Ohn-Bar
- Constructed a dataset using simulating social navigation of a pedestrian on CARLA simulater.
- Trained and evaluated an large language model-powered VLN model that generates navigations instructions for blind people with temporal awareness.
- Developed an application to annotate video of motion of blind people with TKinter library.
- Conducted user studies to collect motion data to train motion generation model.

Apr. 2021 - Dec. 2023 **Research Internship**
IBM Research
Advisor: Chieko Asakawa, Hironobu Takagi
- Launched a research project by identifying of people with visual impairment that they require assistance when navigating a maze-like indoor environement with many intersections.
- Developed an iOS navigation application for people with visual impairment.
- Gathered a unique image dataset of intersections scanned by LiDAR sensor.
- Developed an machine learning model for detecting intersections on iOS using CoreML library.
- Conducted a user study and analyzed using statistical tests.
- Conducted a demo session of AI suitcase (navigation robot for blind people) at CSUN conference.

Jun. 2022 - Sep. 2022 **Visiting Researcher**
Cognitive Assistance Lab, Robotics Institute, Carnegie Mellon University
Advisor: Chieko Asakawa, Daisuke Sato
- Identified a technical challenge of navigation robots for blind people that they cannot navigate in unmapped locations and launched a research project.
- Designed a system through a participatory design process with people with visual impairment.
- Implemented a practical sign recognition algorithm using a self-trained object detection model.
- Conducted a user study in a large-scale environment and analyzed using statistical tests.

Awards

Mar. 2021 **Azusa Ono Memorial Award**
Waseda University
The most prestigious award by Waseda University, which 0.014% of students receive.

Dec. 2020 **Best Paper Award**
JSPS WISS 2020 (a domestic conference in Japan)
An award that the top 3% of paper receive.

Scholarship

May. 2024 **Travel support from the Telecommunications Advancement Foundation to MobileHCI 2024**
Jan. 2024 - May. 2024 **Visiting support from Super Global University (SGU)**, ICT & Robotics, Waseda University
Jan. 2024 - May. 2024 **Scholarship for short-term study abroad,** Japan Student Services Organization (JASSO)
Apr. 2023 - Mar. 2026 **Research Fellowship for Young Scientists DC1**, Japan Society for the Promotion of Science
Mar. 2023 **Isao Okawa Scholarship for Information Technology Science**, Waseda University. 200K JPY
Apr. 2021 - Mar. 2023 **Scholarship for Outstanding Master Students**, Japan Student Services Organization (JASSO)

Skills

Programming Language: **Swift, Python**

Frameworks / Platforms: **Xcode, ARKit, OpenCV, Docker, ROS**

Others: **Adobe CC (Illustrator, Premiere Pro, and InDesign)**

Publications

Journal Papers and Full Papers

[1] **Masaki Kuribayashi***, Seita Kayukawa*, Hironobu Takagi, Chieko Asakawa, and Shigeo Morishima (* - equal contribution). 2021. **LineChaser: A Smartphone-Based Navigation System for Blind People to Stand in Line.** In Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems. (CHI 2021). DOI: https://doi.org/10.11 45/3411764.3445451

[2] **Masaki Kuribayashi**, Seita Kayukawa, Jayakorn Vongkulbhisal, Daisuke Sato, Chieko Asakawa, Hironobu Takagi, Shigeo Morishima. 2022. **Corridor-Walker: Mobile Indoor Walking Assistance for Blind People to Avoid Obstacles and Recognize Intersections.** In Proceedings of the 24th International Conference on Human-Computer Interaction with Mobile Devices and Services. (Mobile HCI 2022). DOI: https://doi.org/10.1145/3546714

[3] **Masaki Kuribayashi,** Tatsuya Ishihara, Daisuke Sato, Jayakorn Vongkulbhisal, Karnik Ram, Seita Kayukawa, Hironobu Takagi, Shigeo Morishima, and Chieko Asakawa. 2023. **PathFinder: Designing a Map-less Navigation System for Blind People in Unfamiliar Buildings.** In Proceedings of the 2023 CHI Conference on Human Factors in Computing Systems. (CHI 2023). DOI: https://doi.org/10.1145/3544548.3580687

[4] Yusuke Miura, Erwin Wu, **Masaki Kuribayashi**, Hideki Koike, Shigeo Morishima. 2023. **Exploration of Sonification Feedback for People with Visual Impairment to Use Ski Simulator.** Augmented Humans 2023. (AHs 2023). DOI: https://doi.org/10.1145/3582700.3582702

[5] Yuka Kaniwa*, **Masaki Kuribayashi***, Seita Kayukawa, Daisuke Sato, Hironobu Takagi, Chieko Asakawa, Shigeo Morishima (* - equal contribution). 2024. **ChitChatGuide: Enabling Exploration in a Shopping Mall for People with Visual Impairments through Conversational Interaction Using Large Language Models**. In Proceedings of the 26th International Conference on Human-Computer Interaction with Mobile Devices and Services. (Mobile HCI 2024) DOI: https://doi.org/10.1145/3676492

[6] Masaya Kubota*, **Masaki Kuribayashi***, Seita Kayukawa, Hironobu Takagi, Chieko Asakawa, Shigeo Morishima (* - equal contribution). 2024. **Snap&Nav: Smartphone-based Indoor Navigation System For Blind People via Floor Map Analysis and Intersection Detection**. In Proceedings of the 26th International Conference on Human-Computer Interaction with Mobile Devices and Services. (Mobile HCI 2024) DOI: https://doi.org/10.1145/3676522

[7] Hee Jae Kim, Kathakoli Sengupta, **Masaki Kuribayashi**, Hernisa Kacorri, Eshed Ohn-Bar. 2024. **Text to Blind Motion**. Neural Information Processing Systems (NeurIPS 2024). To be published.

[8] **Masaki Kuribayashi**, Kohei Uehara, Allan Wang, Daisuke Sato, Simon Chu and Shigeo Morishima. 2024. **Memory-Maze: Scenario Driven Benchmark and Visual Language Navigation Model for Guiding Blind People,** arXiv. DOI: https://doi.org/10.48550/arXiv.2405.0706

Short Papers and Posters

[8] **Masaki Kuribayashi**, Seita Kayukawa, Jayakorn Vongkulbhisal, Daisuke Sato, Chieko Asakawa, Hironobu Takagi, Shigeo Morishima. 2021. **Designing a Smartphone-Based Assistance System for Blind People to Recognize Intersections and Obstacles in Indoor Corridors.** Mobile and Ubiquitous Systems. (Mobiquitous 2021).

[9] Yusuke Miura, **Masaki Kuribayashi**, Erwin Wu, Hideki Koike, Shigeo Morishima. 2022. **A Study on Sonification Method of Simulator-Based Ski Training for People with Visual Impairment.** SIGGRAPH Asia 2022 Posters. (SA '22 Posters).

[10] **Masaki Kuribayashi**, Hironobu Takagi, Chieko Asakawa, Shigeo Morishima. 2023.**Textual and Directional Sign Recognition Algorithm for People with Visual Impairment by Linking Texts and Arrows**. The IEEE/CVF Conference on Computer Vision and Pattern Recognition 2023 Workshop (CVPR 2023 Workshop).

[11] **Masaki Kuribayashi**, Kohei Uehara, Allan Wang, Daisuke Sato, Simon Chu and Shigeo Morishima. 2024. **Memory-Maze: Benchmark and Visual Language Navigation Model for Guiding Blind People.** Robotics: Science and Systems Assistive Robotics Workshop (RSS 2024 Workshop).

Academic Service

Reviewer of CHI, Mobile HCI, IMWUT, ASSETS
CHI 2025 Assistant of Local Arrangement Chair, Organzing Committee

Invited Talks

May. 2023 Masaki Kuribayashi, "**Introduction to Accessibility Research**", Hong Kong Japanese School

Nov. 2023 Masaki Kuribayashi, “**PathFinder: Designing a Map-less Navigation System for Blind People in Unfamiliar Buildings**”, Workshop on Interactive Software and Systems 2023 (WISS2023)

Sep. 2024 Masaki Kuribayashi, “**PathFinder: Designing a Map-less Navigation System for Blind People in Unfamiliar Buildings**”, Forum of Information Teachnology (FIT2024)