

Masaki Ito

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Research Interests

IT + Public Transportation, Open data, Ubiquitous computing, Geographic Information Systems (GIS), human-computer interaction, social acceptance of technology, system software.

Education

Keio University, Japan

2009 Ph.D. in Media and Governance (Area of Study: Computer Engineering)

- Dissertation Title: *A Study of End-user Mapping for Building Interactive Spatial Services*
- Adviser: Professor Hideyuki Tokuda

2004 Master's in Media and Governance (Area of Study: Computer Engineering)

- Thesis Title: *An Interactive Action History Mining Tool for a Context Aware Application*
- Adviser: Professor Hideyuki Tokuda

2002 B.A. in Environmental Information (Area of Study: Computer Engineering)

- Thesis Title: *A Dynamic Media Data Path Generation Structure with A/V Device Cooperation*
- Adviser: Professor Hideyuki Tokuda

Employment

2013-Present Research Associate, Institute of Industrial Science, The University of Tokyo (Tokyo, Japan)

- Planning and management of the “Open Smart City” project especially in terms of transportation.
- Giving a lecture of programming.
- Supervision of graduate students in the lab.

2010-2013 Assistant Professor, Graduate School of Engineering, Tottori University (Tottori, Japan)

- Planning and management of “Bus-Net” project, making a route planner of regional transportation.
- Giving a lecture of computer science including programming and compute

networks.

- Supervision of graduate and undergraduate students in the lab.

2008-2010 Research Associate, Graduate School of Media and Governance, Keio University (Kanagawa, Japan)

- Planning and management of research projects.
- Supervision of graduate and undergraduate students in the lab.

2007-08 Programmer, Orkney Inc. (Kanagawa, Japan)

- Renewal of server and software of a web-map service for GIS professionals.
- Creating an installable package of open-source GIS software for retailing.

Projects (selected)

Engaged in the following projects in these years.

2016-Present Regional Big Data of Public Transportation Project

Funded by Japan Society for the Promotion of Science (JSPS) KAKENHI.

This project aims to develop a method to analyze big data of the usage of public transportation captured from an electronic ticketing system with a smart card. From the fine grained data of movement within the city, we will evaluate transportation system in terms of coverage, networking and pricing etc. This project is lead by Prof. Miyazaki at National Institute of Technology, Kagawa College who is a specialist of regional transportation. We will also work with Kotoden, a regional train and bus operator in Kagawa Prefecture.

My primary role:

- Big data analysis with Hadoop.
- GIS operation and visualization.

2014-Present Localization for Subway Train Project

Funded by National Institute of Information and Communications Technology (NICT), Japan.

This project aims to develop a localization method in a subway train, where GPS signal does not reach. We utilize barometer of a smartphone, and find an exact location by observing the change of the air pressure. We developed a smartphone application equipped with the localization method for iPhone, and demonstrated that the accuracy of the method is more than 80 %.

My primary role:

- Leading the project.
- Development of the algorithm.
- Writing the paper.

2014-Present Regional Public Transportation Open Data Project

Funded by Kakegawa City, Japan Agency for Local Authority Information Systems (J-LIS).

This project aims to help a small transportation agency to publish their data as open data including static timetables and dynamic location of vehicles. We developed a Web-based system to manage and publish transportation schedule, and a smartphone application to report real-time location from the vehicle. In corporation with some local governments including Kakegawa, Shimada, Yaizu in Shizuoka Prefecture, we published their regional route bus data as open data including for Google Maps.

In order to accelerate the trend of open data of public transportation, I organized “Transportation Geomedia Summit” symposium in February 2016, where I invited a ministry official, companies who develop path finder of public transportation such as Navitime-Japan and Jordan, a consultant of regional transportation and an operator of public transportation as speakers. After the symposium, I and the speakers have been discussing utilization of open data.

My primary role:

- Design and development of web system and smartphone apps.
- Negotiation with local governments, transportation agencies and other related people.

2011-2013 Development of Automatic Vehicle Location System

Funded by Tottori Prefecture, Japan.

This project developed an automatic vehicle location system using smartphones for route buses in Tottori Prefecture. In order to deploy to route bus in rural areas, we utilized a smartphone as an in-vehicle device due to its cost benefit. The system we developed have been utilized across Tottori Prefecture with more than 200 vehicles.

My primary role:

- Design and implementation of the system.
- Analysis and visualization of the data of vehicle movement.

2011-2013 Access Analysis of Route Planner

Funded by Ministry of Internal Affairs and Communications.

This project developed an analyzer the access log of Bus-Net, a web-based route planner which we also developed for Tottori Prefecture. Since many users of public transportation use the service beforehand, we can find the real demand for travel which is applicable to improve transportation service including the network and the timetable. We developed an interactive web service to handle the log data to visualize various aspects of the demand of the travel in the region.

My primary role:

- Development of the analytical methods.
- Design and implementation of the web system.

Academic Activities

- An organizer of the special session “Travel and Places” in Human Communication Symposium 2015, 2015.
- A member of steering committee of Special Interest Group of Mobile and Pervasive Computing in IPSJ, 2015-.
- A chair of “Human Probe” research group in IEICE, 2014-.
- A member of a program committee of Human-Communication Journal in IEICE, 2013, 2015.
- A member of the Institute of Electronics, Information and Communication Engineers

(IEICE), 2013-.

- A technical program committee member of the 6th International Conference on Frontier of Computer Science and Technology (FCST11), 2011.
- A technical program committee of the workshop on Social Connections in the Urban Space (in conjunction with SocialCom 2011)(SocialUrb 2011), 2011.
- A member of GIS Association of Japan, 2010-
- A member of Information Processing Society of Japan (IPSJ), 2010-.

Social Activities

- A program committee member of WhereCamp in Berlin, 2016-
- A committee member of “Ubern-Data Challenge” , 2016-
- A committee member of Future Regional Transportation Conference, 2016-
- An organizer of “Transportation-Geomedia Summit” conference, 2015-
- A chair of the committee of GeoWeb technology in council of Geo-Content Circulation. 2012-
- A committee member of “Geomedia Summit” conference, 2010-
- An organizer of Geo+Web Technology workshop. 2010-

Research Grants

- Odakyu Foundation Research Grant, 2014.
- JSPS KAKENHI Grant-in-Aid for Young Scientists, 2013-2016.
- SCOPE: Strategic Information and Communications R&D Promotion Programme by Ministry of Internal Affairs and Communications, 2012-2013.
- “Keio University Taikichiro Mori Memorial Scholarship fund,” 2003–2007.

Awards

- “Best Application Award,” Tokyo Station Hackathon, January 2016.
- “Best Paper Award,” MELT2015, November 2015.
- “Highly Commended Paper” Award (mPATH: An Interactive Visualization Framework for Behavior History), AINA2005, March 2005.

Publications (Selected)

- **Masaki Ito**, Yukiko Katagiri, Mikiko Ishikawa, and Hideyuki Tokuda, “Airy Notes: Environmental Monitoring by Wireless Sensor Network System for Landscape Planning,” Journal of Information Processing Society of Japan, Vol.49, No.1, pp 69–82, Jan. 2008.
- **Masaki Ito**, Jin Nakazawa, and Hideyuki Tokuda, “mPATH: A Software Framework for Interactive Visualization of Behavior History,” Journal of Mobile Multimedia, Vol.1. No.3, pp 255–269, 2005.

- **Masaki Ito**, Yukiko Katagiri, Mikiko Ishikawa, and Hideyuki Tokuda, "Airy Notes Project: Creating Landscape Planning Method for the Ubicomp World," International Workshop on Hybrid Design Practice: Situating Ubicomp's Interdisciplinarity, In Conjunction with Ubicomp 2009, pp. 89-90, September 2009.
- Katsuya Hashizume, Kazuhiro Imura, Kyohei Kawada, Naoya Namatame, Tomotaka Ito, **Masaki Ito**, Jin Nakazawa, Kazunori Takashio, and Hideyuki Tokuda, "Swing, Snap and Stamp It! : Device Interaction with Fun," Ubicomp 2009 Videos, pp. 140-143, October 2009.
- Soko Aoki, **Masaki Ito**, Junichi Yura, Jin Nakazawa, Kazunori Takashio and Hideyuki Tokuda "u-Photo Mobile: Interacting with Smart Environments via Clickable Photos on Mobile Phones," The 5th International Conference on Intelligent Environments (IE09), July 2009.
- Tomotaka Ito, Katsuya Hashizume, Kyohei Kawada, Naoki Nakagawa, Naoya Namatame, **Masaki Ito**, Jin Nakazawa, Kazunori Takashio, and Hideyuki Tokuda: "Snappy: A Snap-based Human Interaction for Multiple Device Collaboration," Pervasive 2009 Demonstrations, May 2009.
- **Masaki Ito**, Yukiko Katagiri, Mikiko Ishikawa, and Hideyuki Tokuda, "Airy Notes: An Experiment of Environmental Monitoring for Improving Urban Environment Using Tiny Wireless Sensor Modules," Sixth Annual IEEE International Conference on Pervasive Computing and Communications (PerCom 2008) Demonstration, March 2008.
- **Masaki Ito**, Yukiko Katagiri, Mikiko Ishikawa, and Hideyuki Tokuda, "Airy Notes: An Experiment of Microclimate Monitoring in Shinjuku Gyoen Garden," Fourth International Conference on Networked Sensing Systems (INSS 2007), pp.260–266, June 2007.
- **Masaki Ito**, Jin Nakazawa, and Hideyuki Tokuda, "Software Architecture for Map-based Services in Ubiquitous Computing Environment," MOBILE MAPS 2005, in combination with MobileHCI 2005, September 2005.
- **Masaki Ito**, Yuu Furuichi, Jin Nakazawa, and Hideyuki Tokuda, "mPATH View: An Interactive Behavior History Viewer for Enhancing Communication," Adjunct Proceedings of the Third International Conference on Pervasive Computing (Pervasive 2005 Demonstrations), pp.93–96, May 2005.
- **Masaki Ito**, Jin Nakazawa, and Hideyuki Tokuda, "mPATH: An Interactive Visualization Framework for Behavior History," The IEEE 19th International Conference on Advanced Information Networking and Applications (AINA2005), pp.247–252, March 2005.
- **Masaki Ito**, Jin Nakazawa, and Hideyuki Tokuda, "A Framework for Personalizing Action History Viewer," Pervasive 2004 Workshop on Memory and Sharing of Experiences, pp.87-94, April 2004.
- **Masaki Ito**, Akiko Iwaya, Masato Saito, Kenichi Nakanishi, Kenta Matsumiya, Jin Nakazawa, Nobuhiko Nishio, Kazunori Takashio, and Hideyuki Tokuda, "Smart Furniture: Improvising Ubiquitous Hot-spot Environment," 3rd International Workshop on Smart Appliances and Wearable Computing (IWSAWC2003), pp.248-253, May 2003.

Technical Skills

- Programming: Java, C, C++, Objective-C, Swift, Ruby, Python, Perl, Javascript
- Platform of App: iOS, Android, Web, macOS, Windows, Command line tools
- Middleware: Hadoop, React.js, PostgreSQL(PostGIS), Ruby on Rails, Java Servlet
- Presentation: HTML, CSS, LaTeX, Photoshop, Illustrator, Microsoft Office, ArcGIS, QGIS
- OS: Windows, macOS, Linux, FreeBSD

Language Skills

- Japanese: Native
- English: Fluent