Michael Jae-Yoon Chung

Intrinsic
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Professional Experience

Senior Robotics Engineer, Intrinsic/Vicarious 2021 – Present
Intrinsic/Vicarious (Vicarious was acquired by Intrinsic in May, 2022) Seattle, WA (Remote)

- "Intrinsic is building an intelligent robotics platform"
- Led the effort to adopt service-oriented architecture on deployed robot applications and then collaborated to deliver human-machine interface integration, containerization, and application management command-line tools.
- Collaborated with grasping and control team (separately) to design, plan, and adopt service-oriented architecture on deployed components to improve application initialization/execution speed, robustness, and isolation.

Robotics Applications Engineer 2016 – 2018
Savioke San Jose, CA

- Contributed to developing and maintaining on-board and desktop application backends (e.g., a single and multi-robot behavior management system) and support infrastructure (e.g., configuration and notification management systems) that were deployed to 50+ mobile robots.
- Deployed a non-roboticist-friendly robot programming system and used it for collaborating with partner companies including an airport management company in Southeast Asia.
- Explored new mobile robot applications using techniques adopted from product design research, which resulted in beta applications and academic publications.

Research Assistant 2011 – 2015, 2018 – 2020
University of Washington Seattle, WA

- Designed, built, and 3+ evaluated robot programming systems for non-roboticist developers with inspirations drawn from programming languages research and web development communities' work.
- Built and deployed end-to-end mobile robot and robot manipulator applications involving perception, planning and control, and UI components; evaluated the applications by conducting user studies.
- Communicated insights in 20+ publications and 10+ presentations at major robotics conferences.
- Recruited, trained, and mentored 14 undergraduate students and co-authored 5+ academic papers with 7 of them; two students started their own research projects which resulted in academic publications.

Education

Ph.D., Computer Science & Engineering July 2020
University of Washington Seattle, WA
Dissertation: *Human-Centered End-User Programming for Interactive Service Robots*
Reading committee: Maya Cakmak (Co-Chair), Rajesh P.N. Rao, (Co-Chair), Dieter Fox, Blake Hannaford
Advisors: Maya Cakmak and Rajesh P.N. Rao

Master of Science, Computer Science & Engineering November 2013
University of Washington Seattle, WA
Thesis: *Accelerating Imitation Learning through Crowdsourcing*
Advisors: Rajesh P.N. Rao and Maya Cakmak

Bachelor of Science, Computer Science June 2010
University of Washington Seattle, WA
Thesis: *Toward Hierarchical BCIs: Combined Motor Imagery and Evoked Potentials for a Humanoid Robot Control*
Advisor: Rajesh P.N. Rao

Publications

[1] **Michael Jae-Yoon Chung**, Mino Nakura, Sai Harshita Neti, Anthony Lu, Elana Hummel, and Maya Cakmak. "ConCodeIt! A Comparison of Concurrency Interfaces in Block-based Visual Robot Programming (submitted)". *IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*. 2020.

[2] **Michael Jae-Yoon Chung** and Maya Cakmak. "Iterative Repair of Social Robot Programs from Implicit User Feedback via Bayesian Inference". *Robotics: Science and Systems (RSS)*. 2020.

[3] **Michael Jae-Yoon Chung** and Maya Cakmak. ""How was your stay?": Exploring the Use of Robots for Gathering Customer Feedback in the Hospitality Industry". *IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN)*. 2018.

[4] **Michael Jae-Yoon Chung**, Justin Huang, Leila Takayama, Tessa Lau, and Maya Cakmak. "Iterative Design of a System for Programming Socially Interactive Service Robots". *International Conference on Social Robotics (ICSR)*. 2016.

[5] **Michael Jae-Yoon Chung***, Andrzej Pronobis*, Maya Cakmak, Dieter Fox, and Rajesh P.N. Rao. "Autonomous Question Answering with Mobile Robots in Human-Populated Environments". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2016.

[6] **Michael Jae-Yoon Chung**, Abram L. Friesen, Dieter Fox, Andrew N. Meltzoff, and Rajesh P.N. Rao. "A Bayesian Developmental Approach to Robotic Goal-Based Imitation Learning". *PloS one*. 2015.

[7] **Michael Jae-Yoon Chung**, Andrzej Pronobis, Maya Cakmak, Dieter Fox, and Rajesh P.N. Rao. "Designing Information Gathering Robots for Human-Populated Environments". *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. 2015.

[8] **Michael Jae-Yoon Chung**, Maxwell Forbes, Maya Cakmak, and Rajesh P.N. Rao. "Accelerating Imitation Learning through Crowdsourcing". *IEEE International Conference on Robotics and Automation (ICRA)*. 2014.

[9] Maxwell Forbes, **Michael Jae-Yoon Chung**, Maya Cakmak, and Rajesh P.N. Rao. "Programming by Demonstration with Crowdsourced Action Fixes". *AAAI Conference on Human Computation and Crowdsourcing (HCOMP)*. 2014.

[10] Karthik Mohan, **Mike Chung**, Seungyeop Han, Daniela M. Witten, Su-In Lee, and Maryam Fazel. "Structured Sparse Learning of Multiple Gaussian Graphical Models". *Advances in Neural Information Processing Systems (NIPS)*. 2012.

[11] Matthew Bryan, Griffin Nicoll, Vibinash Thomas, **Mike Chung**, Joshua R Smith, and Rajesh P.N. Rao. "Automatic Extraction of Command Hierarchies for Adaptive Brain-Robot Interfacing". *IEEE International Conference on Robotics and Automation (ICRA)*. 2012.

[12] **Mike Chung***, Eric Rombokas*, Qi An, Yoky Matsuoka, and Jeff A. Bilmes. "Continuous Vocalization Control of Full-scale Assistive Robot". *IEEE-RAS & EMBS International Conference on Biomedical Robotics and Biomechatronics (BioRob)*. 2012.

[13] Mattew Bryan, Joshua Green, **Mike Chung**, Reinhold Scherer, Lillian Chang, Joshua R. Smith, and Rajesh P.N. Rao. "An Adaptive Brain-Computer Interface for Humanoid Robot Control". *IEEE-RAS International Conference on Humanoid Robots (Humanoids)*. 2011.

[14] **Mike Chung**, Matt Bryan, Willy Cheung, Reinhold Scherer, and Rajesh P.N. Rao. "Interactive hierarchical brain-computer interfacing: Uncertainty-based interaction between humans and robots". *International Brain-Computer Interface Conference*. 2011.

[15] **Mike Chung**, Willy Cheung, Reinhold Scherer, and Rajesh. P.N. Rao. "A Hierarchical Architecture for Adaptive Brain-Computer Interfacing". *International Joint Conference on Artificial Intelligence (IJCAI)*. 2011.

[16] Reinhold Scherer, Elisabeth C. V. Friedrich, Brendan Allison, Markus Pröll, **Mike Chung**, Willy Cheung, Rajesh P. N. Rao, and Christa Neuper. "Non-invasive Brain-Computer Interfaces: Enhanced Gaming and Robotic Control". *International Work-Conference on Artificial Neural Networks (IWANN)*. 2011.

[17] **Mike Chung**, Willy Cheung, Reinhold Scherer, and Rajesh P.N. Rao. "Towards Hierarchical BCIs for Robotic Control". *IEEE/EMBS International Conference on Neural Engineering (NER)*. 2011.

[18] Reinhold Scherer, **Mike Chung**, Johnathan Lyon, Willy Cheung, and Rajesh P.N. Rao. "Interaction with Virtual and Augmented Reality Environments using Non-Invasive Brain-Computer Interfacing". *International Conference on Applied Bionics and Biomechanics*. 2010.

Peer-Reviewed Workshop Papers and Posters

[19] **Michael Jae-Yoon Chung** and **Maya Cakmak**. "SOBORO: A Social Robot Behavior Authoring Language". *PD/EUP Workshop, HRI 2022 Workshop*. 2022.

[20] **Michael Jae-Yoon Chung** and Maya Cakmak. "Authoring Human Simulators via Probabilistic Functional Reactive Program Synthesis". *ACM/IEEE International Conference on Human-Robot Interaction (HRI) Late Breaking Report*. 2022.

[21] Rajeswari Hita Kambhamettu, **Michael Jae-Yoon Chung**, Vinitha Ranganeni, and Patrícia Alves-Oliveira. "Collecting Insights into How Novice Programmers Naturally Express Programs for Robots". *PLATEAU 2021 Workshop*. 2021.

[22] **Michael Jae-Yoon Chung** and Maya Cakmak. "Exploring the Use of Robots for Gathering Customer Feedback in the Hospitality Industry". *Social Robots in the Wild, HRI 2018 Workshop*. 2018.

[23] **Michael Jae-Yoon Chung**, Justin Huang, Leila Takayama, and Maya Cakmak. "Iterative Design of a System for Programming Socially Interactive Service Robots (poster)". *Perspectives on Analysis and Design of Human-Centered Robotics, IROS 2016 Workshop*. 2016.

[24] **Michael Jae-Yoon Chung**, Andrzej Pronobis, Maya Cakmak, Dieter Fox, and Rajesh PN Rao. "Exploring the Potential of Information Gathering Robots". *ACM/IEEE International Conference on Human-Robot Interaction (HRI) Extended Abstracts*. 2015.

[25] **Mike Chung***, Eric Rombokas*, Yoky Matsuoka, Jeff Bilmes, and Maya Cakmak. "Assistive Robot Control Using the Vocal Joystick". *Pioneers Workshop, HRI 2014 Workshop*. 2014.

[26] Maxwell Forbes, **Michael Jae-Yoon Chung**, Maya Cakmak, Luke Zettlemoyer, and Rajesh PN Rao. "Grounding antonym adjective pairs through interaction". *Humans and Robots in Asymmetric Interactions, HRI 2014 Workshop*. 2014.

[27] **Mike Chung**, Reinhold Scherer, Johnathan Lyon, Willy Cheung, and Rajesh PN Rao. "Towards Hierarchical BCIs: Combining Motor Imagery and Evoked Potentials for Robotic Control (poster)". *International Brain-Computer Interface Conference Poster*. 2010.

Mentoring

Undergraduate Research

- Hita Kambhamettu, 2021
- Mino Nakura, 2019-2020
- Anthony Lu, 2019-2020
- Elana Hummel, 2019-2020
- Eric Vincent, 2016
- Max Leigh Martens Glass, 2014-2015

- Aakash Sethi, 2014-2015
- Kevin Vu, 2014-2015
- Erin Yejin Yoon, 2014-2015
- Jerry Zhang, 2014-2015
- Maxwell Forbes, 2013
- Michael Sloan, 2012
- Jesse Dodge, 2012
- Matthew Bryan, 2010-2011
- Joshua Green, 2010-2011

Teaching

Undergraduate Robotics Capstone
Teaching Assistant, September 2013 – December 2013
Teaching Assistant, September 2011 – December 2011

Professional Master's Program - Robotics
Guest Instructor, May 2018

Departmental & Academic Services

Outreach
- Research in Computing Presentation, 2019
- Engineering Discovery Days (previously called "Computing Open House"), 2013, 2014, 2018
- Gyeonggibuk Science High School Students Savioke Visit Day, 2016
- DawgBytes-High School Girl's Summer Camp Session 2, 2014
- SSF: The Breath of Computing, 2013

Entrepreneurship Club
Co-organizer, 2018 – 2019

Reviewer
- CHI: 2017
- HRI: 2014, 2020
- ICRA: 2012, 2015, 2016
- ICSR: 2016
- IROS: 2014, 2015, 2016, 2018
- JINT: 2015
- RA-L: 2018, 2020
- ROMAN: 2018, 2020
- SORO: 2020
- UIST: 2019

Media Coverage & Talks

1. Iterative Design of Robot Services in the Wild, HRI-LSI Workshop Invited Talk, 2022
2. Talking Robotics #1 - Michael Jae Yoon Chung, Talking Robotics, 2020
3. Probabilistic Models for Human-Robot Interaction and Robotic Learning, ONR Science of Autonomy Meeting, 2015
4. Ask the crowd: Robots learn faster, better with online helpers, UW Today, 2014
5. Mind-Controlled Robot Uses Human Brainwaves, Discovery News, 2010