Michael Jae-Yoon Chung

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Professional Summary

My research focuses on facilitating creating new robot applications and behaviors with product design techniques and non-expert friendly programming systems. I have industry experience of integrating research work with a company's core system, using it to collaborate with partners, and maintaining it over a year. I hope to continue working on making programming systems and establishing robot applications in industry sectors such as education, entertainment, health-care, and beyond.

Education

Ph.D., Computer Science & Engineering
University of Washington
September 2011 – December 2015, March 2017 – July 2020
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
University of Washington
November 2013
Thesis: *Accelerating Imitation Learning through Crowdsourcing*
Advisors: Rajesh P.N. Rao and Maya Cakmak

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

Work Experience

Robot Applications Team Member **Savioke**
January 2017 – February 2018
Contributed to creating and maintaining the core application-level robot software. I mainly worked on building building a behavior management system and creating and maintaining robot behaviors, which was based on the research team's work. I also regularly contributed to developing support infrastructure (e.g., configuration and notification management systems) and multi-robot control centers (e.g., scheduling, mapping, and admin interfaces).

Research Intern **Savioke**
January 2016 – December 2016
Deployed a non-expert friendly robot programming system and enabled collaborations with partner companies such as an airport management company in Southeast Asia. While collaborating, we explored new robot applications with prototyping techniques adopted from product design research. Some of the new applications became official for beta customers.

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**, 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. "Exploring the Use of Robots for Gathering Customer Feedback in the Hospitality Industry". *Social Robots in the Wild, HRI 2018 Workshop*. 2018.

[20] 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.

[21] 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.

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

[23] 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.

[24] 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.

Teaching, Outreach, and Departmental Services

Departmental services were for Computer Science & Engineering, University of Washington.

Entrepreneurship Club
Co-organizer, September 2018 – September 2019, co-organized speaker series, panel discussions, and social events with Madrona Venture Group.

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

Undergraduate Robotics Capstone
Teaching Assistant, September 2013 – December 2013
Teaching Assistant, September 2011 – December 2011, recruited two students from the class continue their class projects as research work.

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

Mentoring

I mentored a total of 14 undergraduate students and have accepted academic papers with six of them. Two students worked on independent projects which resulted in conference venues such as ICRA and HCOMP. One student won the CRA Outstanding Undergraduate Researcher award and another student eventually was accepted to the graduate program at the University of Washington Computer Science & Engineering to pursue Ph.D.

Academic Service

I have reviewed for the following journals and conferences

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

Skills

Robotics: ROS, Python, C++, shell-scripting, linux
Web development: Javascript, Node.js, Meteor, ReactiveX/RxJS, React
Program languages research: Racket, Rosette, WebPPL
Others: git, Java, C#
Languages: English (fluent), Korean (native)