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Associate Professor, Department of Biomedical Engineering
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CONTACT INFORMATION

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RESEARCH AREAS

Tele-medical Robotics, Assistive Robotics, Artificial Intelligence (Machine Learning/Deep Learning), Human-Robot Interaction, Haptics, and Social Robotics

EDUCATION

Georgia Institute of Technology, Atlanta, Georgia, U.S.A.

- Ph.D., Electrical and Computer Engineering *August 2012*
- Advisor: Prof. Ayanna M. Howard
- Thesis: Robot-based Haptic Perception and Telepresence for the Visually Impaired

Seoul National University, Seoul, Korea

- M.S., Electrical Engineering and Computer Science *February 2002*
- Advisor: Prof. Beom Hee Lee
- Thesis: A Study on the Modeling and Estimation of Elasticity of a Deformable Object Using a DD-Robot

Seoul National University, Seoul, Korea

- B.S., Electrical Engineering *February 2000*
- Advisor: Prof. Seung-Il Moon

PROFESSIONAL EXPERIENCE

The George Washington University, Washington, DC, U.S.A.

Associate Professor *May 2020 – Present*
Assistant Professor *September 2015 – May 2020*

NIH R21 : Wearable Sensors and AI to Recognize and Evaluate IADLs

A Digital Nudge: Assessing the Impact of an Immutable Records Data Management Platform on Student Researcher Ethics

- NSF Award 2124866. Project period: January 2022–December 2024. Co-PI.

NSF CAREER: Social Intelligence with Contextual Ambidexterity for Long-Term Human-Robot Interaction and Intervention (LT-HRI^2)

- NSF Award 1846658. Project period: March 2019–February 2024. Sole PI.
- Developing a social robotic agent that can learn behaviors through contextual interaction, coping with the developmental progress of adolescents.
- Model-based machine learning as well as deep learning will be utilized to analyze and learn from auditory, gestural, and conversational interactions.

NRI: Music-based Interactive Robotic Orchestration for Children with ASD

- NIH R01 HD082914. Project period: September 2015– May 2019. Lead PI.
- Developing a music-based interactive robotic framework for children with autism spectrum disorder (ASD)
- Multi-modal interaction study for designing personalized and autonomous therapeutic system with quantitative measurements.

Multimodal Perception for Virtual-Reality(VR)-based Training and Evaluation

- MWN-Tech. Project period: August 2017 – March 2019
- Developing an intelligent gesture user-interface (Gesture-UI) to understand naturalistic human gestures
- Utilizing machine learning (deep learning) and active RGB-D sensing to capture and analyze human movements and gestures
- Enhancing the user experience and learning outcomes through interactive analysis of user's progress.

Tele-assistive Robotic Nurse for Human-Robot Collaboration in Neonatal Environment

- CTSI-CN Grant. Project period: June 2017 – May 2018. PI.
- Clinical and Translational Science Institute at Children's National (CTSI-CN) collaborative grant.
- Developing a multi-modal interface to control a tele-robotic mobile manipulator over wireless network
- Integrating haptics, image processing, virtual reality (VR) interfaces, and machine learning
- Human subject studies on-going in collaboration with the School of Nursing.

Using Robots to Prime Neuropredictive Brain Circuits in Children with Autism Spectrum Disorders

- GW OVPR CDRF Grant. Project period: June 2016 – May 2018
- Developing an affordance-based robotic behavior and interaction model for robot-based language therapy
- Utilizing vocal and behavioral analysis for multi-modal evaluation
- Cross-collaboration study with special education and neuro-science.

New York Institute of Technology, New York, NY, U.S.A.

Assistant Professor *September 2013 – August 2015*

NRI: Music-based Interactive Robotic Orchestration for Children with ASD

- NIH 5 R01 HD082914-01, Project Period: September 2014– August 2015
- Developing a music-based interactive robotic framework for children with autism spectrum disorder (ASD)

Georgia Institute of Technology, Atlanta, Georgia, U.S.A.

Postdoctoral Research Fellow *August 2012 – July 2013*

VR-in-a-Box: Surgical Simulator

- Designed an efficient methodology for haptic and visual feedback simulator for training medical students on a gall-bladder operation
- Utilized mobile devices and RGB-D depth cameras to interact with the user and acquire measurements for learning progress

Georgia Institute of Technology, Atlanta, Georgia, U.S.A.

Graduate Research Assistant *August 2006 – August 2012*

Robot-Learning from Teleoperation Based Instruction and Multi-modal Interaction

- Developed a control architecture for a mobile manipulation system with the Pioneer3AT mobile robot and the 5-DoF Pioneer Arm manipulator
- Investigated the performance of machine learning algorithms such as artificial neural-networks and support-vector machine on robotic learning of fine skills such as human hand-writing
- Designed a haptic skill-transfer framework in order to create an efficient learning pathway between human and robot as well as human and human

Mobile Manipulation System Control and Task Solution

- Designed an integrated framework for the control of a mobile manipulator system composed of the Segway and KUKA Lightweight Arm (prototype of DLR Lightweight arm) to accomplish a task of inserting and playing a CD

Haptic Fusion of Multimodal Perception with Mobile Manipulator for visually impaired users

- Proposed and designed a framework for the telepresence of an individual with a visual impairment utilizing a haptic interface to generate real-time haptic rendering of a remote environment
- Developed heterogeneous stereo vision algorithms for a mobile manipulator, and designed real-time 3D map generation algorithm and real-time haptic rendering algorithm based on the 3D grid map

Accessible Robotic Programming for Students with Disabilities

- Designed a multi-modal feedback system for assisting individuals with visual impairments for learning computer programming using a robotic system
- Investigated the role of haptic and auditory feedback on the learning curve of programming education for the visually impaired
- Contributed as a program leader in designing and running the program sessions

Automation and Systems Research Institute, Seoul National University, Seoul, Korea

Researcher *September 2005 – May 2006*

Multi-agent Robotic Navigation

- Investigated the topic of collision avoidance in mobile robot navigation using the *collision map method*

LG Electronics, Seoul, Korea

Research Engineer *January 2002 – September 2005*

System-on-Chip (SoC) Projects: WirelessLAN SoC, DMB, ITS-DSRC

- Contributed as a system architect for design-for-testing (DFT) for the following projects:
  - 802.11a Wireless LAN Embedded System-on-Chip
  - Intelligent Traffic System for Dedicated Short Range Communication (ITS-DSRC)
  - Digital Multimedia Broadcasting (DMB) System-on-Chip
- Developed FPGA system for implementing and testing WirelessLAN protocol in AMBA-based architecrture
- Designed optimal DFT-oriented memory structure for the above projects
- Analyzed and estimated the power consumption of the designed SoC design, and contributed in achieving low-power consumption in the DMB SoC product line
- Mentored junior research engineers in SoC architecture and DFT methodologies
- Achieved ”LG Electronics Best R&D TDR Award” as a team

Seoul National University, Seoul, Korea

Research Assistant *January 2000 – February 2002*

Force Feedback Control of Teleoperated Mine Detector Robot

- Developed a master control system for teleoperation with force-feedback
- Designed a novel algorithm for analyzing contact forces and estimating the elasticity of the object using a robotic manipulator
- Contributed as a leader and main editor in the survey on haptics and vision systems

TEACHING EXPERIENCE

Associate Professor (2020-Present) / **Assistant Professor** (2015-2020) *at The George Washington University*

BME6489&4489 (6045.10): Socially Assistive Robotics and Interactive Learning *Falls 2016-Present*

- Introduction to advanced robot control and programming
- Topics on socially assistive robotics and robotic learning from interaction with humans
- Hands-on projects on socially assistive robotic applications and telemedical robotic skill learning

BME4835-10 (3907-12): Introduction to Assistive Robotics *Springs 2016-Present*

- Introduction to principles of robotics and applied concepts of autonomous robots
- Discussions and hands-on projects on biomedical and assistive robotic applications

BME1010: Introduction to Biomedical Engineering *Fall 2015-Present*

- Lecturer for a session on Introduction to assistive and telemedical robotics as part of BME areas of research.

BME6065: BME Colloquium *Spring 2018 - Present*

BME6050: Research *Spring 2017 - Present*

BME6998,6999: Thesis Research *Fall 2015 - Present*

BME8999: Dissertation Research *Fall 2016 - Present*

BME4925: Capstone Design Project (Mentor) *2016 - Present*

Assistant Professor *at NYIT*

EENG489: Senior Capstone Design Projects I, II *Fall 2013 – Fall 2014*

- Designed and provided a new project theme named I^2E (Intelligent, Interactive, and Entertaining/Educational) Systems
- Instructed and mentored 15 teams of multi-national students (3-5 students per team) with different project topics

EENG-425: Principles of Robotics *Spring 2015*

- The first robotics course provided at NYIT Manhattan campus
- Combined classical robotics principles and modern intelligent robotics curriculum
- Integrated lectures with hands-on projects and multimedia-based discussions

LECTURER *at Georgia Institute of Technology*

ECE3090: Software for Engineering Systems: part-time lecturer *Fall 2012*

ECE8843: Autonomous Control of Robotic Systems: part-time lecturer *Fall 2012*

GRADUATE RESEARCH ADVISOR *at Georgia Institute of Technology*

UROP(Undergraduate Research Opportunities Program), SURE(Summer Undergraduate Research in Engineering/Science) program *Spring 2008 – 2009*

- Organized term projects for the undergraduate researchers and advised them through individual projects such as tactile interface iOS mobile-application design, sound-source localization, and experimental design with multi-modal feedback

ROBOTICS WORKSHOP COORDINATOR/INSTRUCTOR

ARoPAbility program *Summer 2009 – 2013*

- Developed the main platform and software for the "*ARoPAbility* (Accessible Robot Programming for individuals with disAbility)" program
- Organized camps for students with visual impairments associated with NFB (National Federation for the Blind) and CVI (Center for the Visually Impaired) held in Atlanta, Cleveland, Baltimore, Denver, and Berkeley

TEACHING ASSISTANT *at Seoul National University*

Design Projects for Electrical Devices & Systems *Spring 2000 – Fall 2000*

- Instructed and advised the undergraduate thesis project on the hardware & software structure of the project
- Mentored students for their successful demonstrations of the micro-mouse project

GRANTS & CONTRACTS

Federal Funding:

NIH R21 Grant *June 2022 – May 2024*

- NIH #1R21AG077404: "Wearable Sensors and AI to Recognize and Evaluate IADLs." Role: Co-I (Tech.Lead).
- Collaboration Team: Keith Cole (PI), Chung Hyuk Park (Co-I), Leslie Davidson (Co-I), The George Washington University.
- Total amount: ∼$403,750.

NSF CAREER Grant *March 2019 – February 2024*

- NSF #1846658, "CAREER: Social Intelligence with Contextual Ambidexterity for Long-Term Human-Robot Interaction and Intervention (LT-HRI^2)." Role: PI.
- Funded through NSF CBET DARE Program. Total amount: ∼$564,900.

NSF Grant *January 2022 – December 2024*

- NSF #2124866, "A Digital Nudge: Assessing the Impact of an Immutable Records Data Management Platform on Student Researcher Ethics." Role: Co-PI.
- Total amount: $350,000.

KIAT International Collaborative Research and Development Project Grant *Sept. 2019 – June 2021*

- "Development of an Autonomous Omni-directional Mobile Robot with High Accurate Localization based on IMU-Aided Multi-Sensor Fusion in Indoor/Outdoor Environment." Role: Co-PI (PI at GW Site).
- Collaborators: Han Sung Well Tech Co., Nsquare Co., and Chungbuk National University.
- Total amount: $135,000

CTSI-CN Grant *June 2019 – December 2020*

- "CTSI-CN: Early Detection of Autism with Automated Social Cognition & Imitation Screener." Role: Co-I (Tech-Lead).
- Collaborators: Francys Subiaul (GW CCAS), Gregory Wallace (GW CCAS), Chung Hyuk Park (GW SEAS), Ashley Darcy-Mahoney (GW SoN).
- Total amount: $50,000

NIH R01 Grant *September 2014 – May 2019*

- NRI NIH #R01-HD082914: "NRI: Music-based Interactive Robotic Orchestration for Children with ASD." Role: PI (Lead).

- Collaboration Team: Chung Hyuk Park (Lead-PI, The George Washington University), Myounghoon Jeon (PI, Michigan Technological University), Ayanna M. Howard (Sr. Consultant, Georgia Institute of Technology).
- Funded through the National Robotics Initiative (NRI). Total amount: ∼$690,000.

CTSI-CN Grant *June 2017 – May 2018*

- UL1TR001876 / KL2TR001877: "CTSI-CN: Tele-assistive Robotic Nurse for Human-Robot Collaboration in Neonatal Environment." Role: PI.
- Collaborators: Chung Hyuk Park (PI, GW SEAS), Ashley Darcy-Mahoney (Co-PI, GW SoN), and Mia Waldron (Co-PI, Children's National Medical Systems).
- Total amount: $50,000

Non-federal Funding:

GW OVPR CDRF Grant *June 2016 – May 2018*

- "Using Robots to Prime Neuropredictive Brain Circuits in Children with Autism Spectrum Disorders."
- Collaborators: Chung Hyuk Park (PI, GW SEAS BME), Jennifer Frey (Co-I, GW GSEHD), Kevin Pelphrey (Co-I, GW SMHS, ANDI).
- OVPR Cross Disciplinary Research Fund. Total amount: $94,798.

AccelerateGW I-Corps Site Grant *May 2020 – November 2020*

- "VR Playground for Autism."
- Team members: Juyoun Park, Ariana Fazal, and Chung Hyuk Park
- NSF I-CORPS Accelerator grant. Total amount: $3,000.

AccelerateGW I-Corps Site Grant *May 2018 – September 2018*

- "Robots for Autism."
- Team members: Hifza Javed and Chung Hyuk Park
- NSF I-CORPS Accelerator grant. Total amount: $3,000.

AccelerateGW I-Corps Site Grant *November 2017 – April 2018*

- "Apps and Sensory Suite with Multi-modal Perception for Chilren with ASD."
- Team members: Hifza Javed, WonHyong Lee, and Chung Hyuk Park
- NSF I-CORPS Accelerator grant. Total amount: $3,000.

Research Endowment (MWN Tech.) *August 2017 – March 2019*

- "Multimodal Perception for Virtual-Reality (VR)-based Training and Evaluation."
- Foreign collaborative research project. Total amount: ∼$50,000.

NYIT ISRC grants *Fall 2014 – Summer 2015*

- "Therapeutic Robotic System for Children with Autism through Music-based Emotional and Social Interaction," Chung Hyuk Park (PI), $10.6K.
- "Privacy-preserving User Authentication Using 3-D Haptic Interactions," Paolo Gasti (PI), Kiran Balagani (Co-PI), Chung Hyuk Park (Co-PI), $7,000.

PUBLICATIONS

JOURNAL ARTICLES (PUBLISHED/ACCEPTED FOR PUBLICATION)

31. Sangjin Ko, Jaclyn Barnes, **Chung Hyuk Park**, Ayanna Howard and Myounghoon Jeon, "The Effects of Robot Voices and Appearances on Users' Emotion Recognition and Subjective Perception," *Sensors*, 2023.

30. Minsu Jang, JongSuk Choi, Ho Seok Ahn, and **Chung Hyuk Park**, "Editorial: Social human-robot interaction (sHRI) of human-care service robots," in *Frontiers in Robotics and AI*, 2022.

29. Gary Milam, Baijun Xie, Runnan Liu, Xiaoheng Zhu, Juyoun Park, and **Chung Hyuk Park**, "TTrainable Quaternion Extended Kalman Filter with Multi-Head Attention for Dead Reckoning in Autonomous Ground Vehicles," *Sensors*, 2022.

28. Baijun Xie, Gary Milam, Bo Ning, Jaepyeong Cha, and **Chung Hyuk Park**, "DXM-TransFuse U-net: Dual Cross-Modal Transformer Fusion U-net for Automated Nerve Identification," *Computerized Medical Imaging and Graphics*, 2022.

27. Hifza Javed, and **Chung Hyuk Park**, "Promoting Social Engagement with a Multi-Role Dancing Robot for In-Home Autism Care," *Frontiers in Robotics and AI*, 161, 2022.

26. Juyoun Park and **Chung Hyuk Park**, "Recognition and Prediction of Surgical Actions Based on Online Robotic Tool Detection," *IEEE Robotics and Automation Letters (RA-L)*, 6 (2), 2365-2372, 2021.

25. Baijun Xie, Mariia Sidulova, and **Chung Hyuk Park**, "Robust Multimodal Emotion Recognition from Conversation with Transformer-Based Crossmodality Fusion," in *Sensors* - Special Issue: Sensor Based Multi-Modal Emotion Recognition, 21:14, 2021. URL: https://www.mdpi.com/1424-8220/21/14/4913/pdf.

24. Myounghoon Jeon, **Chung Hyuk Park**, Yunkyung Kim, Andreas Riener, Martina Mara, "Editorial: Contextualized affective interactions with robots," in *Frontiers in Psychology*, section Emotion Science, 2021.

23. Bo Ning, Wan Wook Kim, Baijun Xie, Gary Milam, Jonathon Russell, **Chung Hyuk Park**, Ralph P. Tufano, and Jaepyeong Cha, "Improved Nerve Visualization in Head and Neck Surgery using Mueller Polarimetric Imaging: Preclinical Feasibility Study in a Swine Model," *Lasers in Surgery & Medicine*, 53 (10), 1427-1434, 2021.

22. Jaeyeon Lee, Xiao Zhang, **Chung Hyuk Park***, and Minjun Kim*, "Real-time Teleoperation of Magnetic Force-driven Microrobots with 3D Haptic Force Feedback for Micro-navigation and Micro-transportation," *IEEE Robotics and Automation Letters (RA-L)*, 6 (2), 1769-1776, 2021.

21. Tryphena Lewis, HyunJi Kim, Ashley Darcy-Mahoney, WonHyong Lee, **Chung Hyuk Park**, "Robotic Uses in Pediatric Care: A Comprehensive Review," *Journal of Pediatric Nursing*, 2021.

20. Jaclyn A. Barnes, **Chung Hyuk Park**, Ayanna Howard, and Myounghoon Jeon, "Child-Robot Interaction in a Musical Dance Game: An Exploratory Comparison Study between Typically Developing Children and Children with Autism," *International Journal of Human–Computer Interaction*, DOI: 10.1080/10447318.2020.1819667, 2021.

19. Ria Kim, John Schloen, Nathan Campbell, Samantha Horton, Vesna Zderic, Igor Efimov, David Lee, and **Chung Hyuk Park**, "Robot-Assisted Semi-Autonomous Ultrasound Imaging with Tactile Sensing and Convolutional Neural-Networks," *IEEE Transactions on Medical Robotics and Bionics*, 3 (1), 96-105, 2021.

18. **Chung Hyuk Park**, Raquel Ros, Sonya S. Kwak, Chien-Ming Huang, Séverin Lemaignan, "Research Topic Editorial - Towards Real World Impacts: Design, Development, and Deployment of Social Robots in the Wild," Editorial, *Frontiers Robotics and AI*, 2020.

17. WonHyong Lee, **Chung Hyuk Park**, Seyun Jang, and Hye-Kyung Cho, "Design of Effective Robotic Gaze-based Social Cueing for Users in Task-Oriented Situations : How to Overcome In-attentional Blindness," *Applied Sciences, Special Issue on Recent Advances in Assistive Robots*, 2020.

16. Hifza Javed, WonHyong Lee, and **Chung Hyuk Park**, "Toward an Automated Measure of Social Engagement for Children with Autism Spectrum Disorder - a Personalized Computational Modeling Approach," *Frontiers Robotics and AI, Special Topic: Towards Real World Impacts: Design, Development, and Deployment of Social Robots in the Wild*, 2020.

15. Baijun Xie, Jonathan C. Kim, and **Chung Hyuk Park**, "Musical Emotion Recognition with Spectral Feature Extraction Based on a Sinusoidal Model with Model-Based and Deep-Learning Approaches," *Applied Sciences* - Special Issue: Digital Audio Effects, 10.3:902, 2020.

14. Ashiqur Rahaman, **Chung Hyuk Park**, and Byungki Kim, "Design and characterization of a MEMS piezoelectric acoustic sensor with the enhanced signal-to-noise ratio," *Sensors & Actuators: A. Physical*, 2020.

13. Jaclyn Barnes, Shabnam, Eric Vasey, **Chung Hyuk Park**, Myounghoon Jeon, "Child-Robot Theater: Engaging Underrepresented Students in Informal STEAM Education Using Interactive Robots," *IEEE Pervasive Computing*, 2020.

12. Hifza Javed, Rachael Burns, Myoungjoon Jeon, Ayanna M. Howard, and **Chung Hyuk Park**, "A Robotic Framework to Facilitate Sensory Experiences for Children with Autism Spectrum Disorder," *ACM Transactions on Human-Robot Interaction*, 2019.

11. Hifza Javed and **Chung Hyuk Park**. "Interactions with an empathetic agent: Regulating emotions and improving engagement in autism" *IEEE Robotics and Automation Magazine* (RAM; Impact factor=3.574) in the Special Issue on Socially Assistive Robotics, Vol. 26, no. 2, pp. 40-48, 2019.

10. S. Kang, J-H. Lee, J. Park, and **Chung Hyuk Park**. "Special Section on Robotics for Fourth Industrial Revolution," Guest Editorial, *IEEE Transactions on Industrial Informatics*, Vol. 15, no. 1, pp. 537-539, 2019.

9. Rachael Burns, Myounghoon Jeon, and **Chung Hyuk Park**, "Robotic Motion Learning Framework to Promote Social Engagement," *Applied Sciences*, Vol. 8, no. 2., URL: http://www.mdpi.com/2076-3417/8/2/241, 2018.

8. Mohammed, Samer, Hae Won Park, **Chung Hyuk Park**, Yacine Amirat, and Brenna Argall,"Special Issue on Assistive and Rehabilitation Robotics," Editorial, *Autonomous Robots*, Vol. 41, no. 3, pp. 513-517, 2017.

7. **Chung Hyuk Park**, Eun-Seok Ryu, and Ayanna M. Howard, "Telerobotic Haptic Exploration in Art Galleries and Museums for Individuals with Visual Impairments," *IEEE Transactions on Haptics - Special Issue on Haptic Assistive Technology for Individuals who are Visually Impaired*, Vol. 8, no. 3, pp. 327-338, 2015.

6. **Chung Hyuk Park** and Ayanna M. Howard, "Robotics-based Telepresence using Multimodal Interaction for Individuals with Visual Impairments," *International Journal of Adaptive Control and Signal Processing - Special Issue: Applications of Signal Processing and Control to Assistive Technology*, Wiley Online Library, Vol. 28, no. 12, pp. 1514-1532, 2014.

5. **Chung Hyuk Park** and Ayanna M. Howard, "Haptic Visualization of Real-World Environmental Data for Individuals with Visual Impairments," *Lecture Notes in Computer Science*, Vol. 8513, pp. 430-439, Springer, 2014.

4. Rayshun Dorsey, **Chung Hyuk Park**, and Ayanna M. Howard, "Developing the Capabilities of Blind and Visually-Impaired Youth to Build and Program Robots," *Journal on Technology and Persons with Disabilities*, pp. 57-69, 2014.

3. **Chung Hyuk Park** and Ayanna M. Howard, "Telepresence Robotic Technology for Individuals with Visual Impairments Through Real-time Haptic Rendering," *The Journal of Korea Robotics Society*, Vol. 8, no. 3, pp. 197-205, 2013.

2. Ayanna M. Howard, **Chung Hyuk Park**, and Sekou Remy, "Using Haptic and Auditory Interaction Tools to Engage Students with Visual Impairments in Robot Programming Activities," *IEEE Transactions on Learning Technologies*, Vol. 5, pp. 87-95, 2011.

1. **Chung Hyuk Park** and Bum Hee Lee, "Elasticity Modeling and Estimation for Haptic Contact Using a DD-Robot," *Industrial Robot: An International Journal*, Vol. 34, no. 3, pp. 211-216, 2007.

BOOK CHAPTER

3. Lofaro, Daniel M., Frank Lee, Edgar Endress, and Chung Hyuk Park, "Augmented Musical Reality via Smart Connected Pianos," *Virtual Reality*, pp. 167-177. River Publishers, 2022.

2. Ayanna Howard, Yu-Ping Chen, and **Chung Hyuk Park**, "From Autism Spectrum Disorder to Cerebral Palsy: State-of-the-Art in Pediatric Therapy Robots," *The Encyclopedia of Medical Robotics*, Jaydev P. Desai (Editor-in-Chief), World Scientific Publishing Company, pp. 241-261, 2018.

1. Ayanna Howard, Sekou Remy, **Chung Hyuk Park**, Hae Won Park, and Douglas Brooks, "Intelligent Robotics for Assistive Healthcare and Therapy," *The Path to Autonomous Robots*, G. Sukhatme (Ed), Springer Science, pp. 1-17, 2009.

CONFERENCE PAPERS (REFEREED)

49. Baijun Xie and **Chung Hyuk Park**, "Multi-Modal Correlated Network with Emotional Reasoning Knowledge for Social Intelligence Question-Answering," submitted for peer-review at the Artificial Social Intelligence Workshop and Social-IQ Challenge at International Conference on Computer Vision (ICCV), 2023.

48. Baijun Xie, and **Chung Hyuk Park**, " "Can You Guess My Moves?" Playing Charades with a Humanoid Robot Employing Mutual Learning with Emotional Intelligence," *Companion Proceedings of the 2023 ACM/IEEE International Conference on Human-Robot Interaction*, pp. 667-671. 2023.

47. Krystian Burum, Myungeun Lee, Jia Yuan Teoh, and **Chung Hyuk Park**, "AI-Based Interactive Telemedical Query System for Medical Inquiries," to be presented as Late Breaking Report at the 32nd IEEE International Conference on Robot and Human Interactive Communication (RO-MAN), 2023.

46. Zhenhao Zhao, Jonathan Lee, Zongyao Li, **Chung Hyuk Park**, and Peng Wei. "Vision-based Perception with Safety Awareness for UAS Autonomous Landing," AIAA SCITECH 2023 Forum, p. 0126, 2023.

45. Baijun Xie and **Chung Hyuk Park**, "A MultiModal Social Robot Toward Personalized Emotion Interaction," Artificial Intelligence for Human-Robot Interaction (AI-HRI) Fall Symposium, November 4-6, 2021. (Preprint available at: Xie, Baijun, and Chung Hyuk Park. "A MultiModal Social Robot Toward Personalized Emotion Interaction."; arXiv preprint arXiv:2110.05186 (2021).)

44. Mariia Sidulova and **Chung Hyuk Park**, "Towards Explainable Image Analysis for Alzheimer's Disease and Mild Cognitive Impairment Diagnosis," 50th IEEE Applied Imagery Pattern Recognition Workshop (AIPR), October 12-14, 2021.

43. Juyoun Park and **Chung Hyuk Park**, "Recognition and Prediction of Surgical Actions Based on Online Robotic Tool Detection," in the IEEE International Conference in Robotics and Automation (ICRA), May 30 June 5, 2021.

42. Jaeyeon Lee, Xiao Zhang, **Chung Hyuk Park** and Minjun Kim, "Real-time Teleoperation of Magnetic Force-driven Microrobots with 3D Haptic Force Feedback for Micro-navigation and Micro-transportation," in the IEEE International Conference in Robotics and Automation (ICRA), May 30 June 5, 2021.

41. Baijun Xie and **Chung Hyuk Park**, "Empathetic Robot with Transformer-Based Dialogue Agent," in the 18th International Conference on Ubiquitous Robots (UR), July 12-14, 2021.

40. Benjamin J. Choi, Juyoun Park, and **Chung Hyuk Park**, "Formal Verifica-tion for Human-Robot Interaction in Medical Environments" to appear In *Companion of the 2021 ACM/IEEE International Conference on Human-Robot Interaction(HRI '21 Companion)*, March 8–11, 2021, Boulder, CO, USA.ACM, New York,NY, USA, 5 pages, 2021.

39. Mariia Sidulova, Ria Kim, and **Chung Hyuk Park**, "Cerebrovascular Event Detection Robotic System: Rob Bitt," 2020 8th IEEE RAS/EMBS International Conference for Biomedical Robotics and Biomechatronics (BioRob), New York City, NY, USA.

38. Hifza Javed and **Chung Hyuk Park**, "Behavior-based Risk Detection of Autism Spectrum Disorder Through Child-Robot Interaction," in the Companion Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction, March 23, 2020.

37. Baijun Xie and **Chung Hyuk Park**, "Dance with a Robot: Encoder-Decoder Neural Network for Music-Dance Learning," in the Companion Proceedings of the 2020 ACM/IEEE International Conference on Human-Robot Interaction, March23, 2020.

36. **Chung Hyuk Park**, Hifza Javed, and Myounghoon Jeon, "Consensus-based Human-Agent Interaction Model for Emotion Regulation in ASD," in the Proceedings of the 2019 International Conference on Human Computer Interaction (HCII), Communications in Computer and Information Science, Springer, 2019.

35. Paul Robinette, Michael Novitzky, Brittany Duncan, Myounghoon Jeon, Alan Wagner, and **Chung Hyuk Park**, "Dangerous HRI: Testing Real-World Robots has Real-World Consequences," Proceedings of 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2019.

34. Zhi Zheng, Xingliang Li, Jaclyn Barnes, **Chung Hyuk Park**, and Myounghoon Jeon, "Facial Expression Recognition for Children: Can Existing Methods Tuned for Adults be Adopted for Children?" Proceedings of Human Computer Interaction International (HCII), 2019.

33. Jaclyn Barnes, S Maryam FakhrHosseini, Eric Vasey, **Chung Hyuk Park**, and Myounghoon Jeon, "Informal STEAM Education Case Study: Child-Robot Musical Theater," Extended Abstracts of the 2019 CHI Conference on Human Factors in Computing Systems, 2019.

32. Mariah Schrum, **Chung Hyuk Park**, and Ayanna Howard, "Humanoid Therapy Robot for Encouraging Exercise in Dementia Patients," Companion Proceedings of Human Robot Interaction, 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2019.

31. Jaclyn Barnes, S Maryam FakhrHosseini, Eric Vasey, Joseph Ryan, **Chung Hyuk Park**, and Myounghoon Jeon, "Promoting STEAM Education with Child-Robot Musical Theater," Companion Proceedings of Human Robot Interaction, 14th ACM/IEEE International Conference on Human-Robot Interaction (HRI), 2019.

30. Rehab Alhamedi, **Chung Hyuk Park**, and James Hahn, "Sequence-to-Sequence Image Caption Generator," Proceedings of International Conference on Machine Vision, 2018.

29. Zhi Zheng, Yuguang Wang, Jaclyn Barnes, Xingliang Li, **Chung Hyuk Park**, and Myounghoon Jeon. "Non-invasive Gaze Direction Estimation from Head Orientation for Human-Machine Interaction," in Proceedings of the 2018 International Conference on Human-Computer Interaction (HCII), pp. 380-389. Springer, 2018.

28. Fatimah Elsayed, Paolo Gasti, Kiran Balagani, Anand Santhanakrishnan, and **Chung Hyuk Park**, "Continuous and Transparent Authentication of Haptic Users," Proceedings of 2018 IEEE Haptics Symposium, 2018.

27. Hifza Javed, Myounghoon Jeon, and **Chung Hyuk Park**, "Adaptive Framework for Emotional Engagement in Child-Robot Interactions for Autism Interventions," Ubiquitous Robots, 2018.

26. Hifza Javed, Myounghoon Jeon, Ayanna Howard, and **Chung Hyuk Park**, "Robot-Assisted Socio-Emotional Intervention Framework for Children with Autism Spectrum Disorder," Extended Abstract in the Proceedings of ACM/IEEE International Conference on Human-Robot Interaction (HRI 2018), Chicago, March 5-8, 2018.

25. WonHyong Lee, Jaebyung Park, and **Chung Hyuk Park**, "Acceptability of Tele-assistive Robotic Nurse for Human-Robot Collaboration in Medical Environment," Extended Abstract in the Proceedings of ACM/IEEE International Conference on Human-Robot Interaction (HRI 2018), Chicago, March 5-8, 2018.

24. Jonathan C. Kim, Paul Azzi, Myounghoon Jeon, Ayanna M. Howard, and **Chung Hyuk Park**, "Audio-based emotion estimation for interactive robotic therapy for children with autism spectrum disorder," Ubiquitous Robots and Ambient Intelligence (URAI), 2017 14th International Conference on, pp. 39-44. IEEE, 2017.

23. Eric Vasey, Maryam S. FakhrHosseini, Zhi Zheng, **Chung Hyuk Park**, Ayanna Howard, and Myounghoon Jeon, "Development and Usability Testing of a Remote Control App for An Interactive RoboT," In Proceedings of the Human Factors and Ergonomics Society Annual Meeting, vol. 61, no. 1, pp. 808-812. Sage CA: Los Angeles, CA: SAGE Publications, 2017.

22. Rachael Bevill, Srineil Nizambad, **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard, "Multisensory Robotic Therapy through Motion Capture and Imitation for Children with ASD," 2016 Mid-Atlantic Section American Society of Engineering Education spring conference, April 2016, Washington, DC.

21. Paul Azzi, Conor Sheridan, Matt Spadafora, **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard, "Music-Based Emotion and Social Interaction Therapy for Children with ASD Using Interactive Robots," 2016 Mid-Atlantic Section American Society of Engineering Education spring conference, April 2016, Washington, DC.

20. **Chung Hyuk Park** and Ahmed Qureshi, "Comparison Study on Emotional Response Identification with Brain Computer Interface," poster presentation in the NextMed/MMVR22, Los Angeles, CA, 2016.

19. Rachael Bevill, Paul Azzi, Matthew Spadafora, **Chung Hyuk Park**, Hyung Jung Kim, JongWon Lee, Kazi Raihan, Myounghoon Jeon, and Ayanna Howard, "Multisensory Robotic Therapy to Promote Natural Emotional Interaction for Children with ASD," Video and Abstract for the Video Competition, *Proceedings of 2016 ACM/IEEE International Conference on Human-Robot Interaction (HRI 2016)*, New Zealand, 2016.

18. Rachael Bevill, **Chung Hyuk Park**, Hyung Jung Kim, JongWon Lee, Ariana Rennie, Myounghoon Jeon, and Ayanna Howard, "Interactive Robotic Framework for Multi-sensory Therapy for Children with Autism Spectrum Disorder," Extended Abstract (Late-Breaking Report), *Proceedings of 2016 ACM/IEEE International Conference on Human-Robot Interaction (HRI 2016)*, New Zealand, 2016.

17. Ruimin Zhang, Jacklyn Barnes, Ryan, J., Myounghoon Jeon, **Chung Hyuk Park**, and Ayanna M. Howard, "Musical robots for children with ASD using a client-server architecture," Proceedings of the 22nd International Conference on Auditory Display (ICAD2016), Canberra, Australia, July 2-8, 2016.

16. Myounghoon Jeon, Ruimin Zhang, William Lehman, Seyedeh M. Fakhrhosseini, Jaclyn Barnes, and **Chung Hyuk Park**, "Development and evaluation of emotional robots for children with Autism Spectrum Disorders," *Proceedings of the 17th International Conference on Human-Computer Interaction (HCII)*, pp. 372-376, Springer, Cham, 2015.

15. Ruimin Zhang, Myounghoon Jeon, **Chung Hyuk Park**, and Ayanna M. Howard. "Robotic Sonification for Promoting Emotional and Social Interactions of Children with ASD," in *Proceedings of the Tenth Annual ACM/IEEE International Conference on Human-Robot Interaction Extended Abstracts*, pp. 111-112. ACM, 2015.

14. **Chung Hyuk Park**, and Ayanna M. Howard, "Haptic Visualization of Real-World Environmental Data for Individuals with Visual Impairments (Invited Paper)," *Proceedings of the 16th International Conference on Human-Computer Interaction (HCII2014)*, 430-439, Crete, Greece, June, 2014.

13. **Chung Hyuk Park**, Kenneth Wilson, and Ayanna M. Howard, "Pilot Study: Supplementing Surgical Training for Medical Students Using a Low-Cost Virtual Reality Simulator," *Proceedings of CBMS 2014: 27th International Symposium on Computer-Based Medical Systems*, pp. 125-127, May, 2014.

12. Ibrahim Dawha, Saihou Bi.Gorreh, Andrew Olowude, and **Chung Hyuk Park**, "Haptic System for Force-Profile Acquisition and Display for a Realistic Surgical Simulator," short paper, *Proceedings of CBMS 2014: 27th International Symposium on Computer-Based Medical Systems*, pp. 551-552, May, 2014.

11. **Chung Hyuk Park** and Ayanna M. Howard, "Engaging Students with Visual Impairments in Engineering and Computer Science through Robotic Game Programming," *Proceedings of the 120th American Society for Engineering Education (ASEE) Annual Conference & Exposition*, Atlanta, GA, U.S.A., June, 2013.

10. **Chung Hyuk Park**, Kenneth Wilson, and Ayanna M. Howard, "Examining the Learning Effects of a Low-Cost Haptic-Based Virtual Reality Simulator on Laparoscopic Cholecystectomy," *Proceedings of CBMS 2013: 26th International Symposium on Computer-Based Medical Systems*, pp. 233-238, June, 2013.

9. **Chung Hyuk Park** and Ayanna M. Howard, "Real-time Haptic Rendering and Haptic Telepresence," *Proceedings of IEEE World Haptics Conference 2013, The 5th Joint Eurohaptics Conference and IEEE Haptics Symposium*, pp. 229-234, Daejeon, Korea, April 14-17, 2013.

8. Rayshun Dorsey, **Chung Hyuk Park**, and Ayanna M. Howard, "Robotics for Youth with Visual Impairments," in the Annual International Technology and Persons with Disabilities Conference, San Diego, U.S.A., February, 2013.

7. **Chung Hyuk Park** and Ayanna M. Howard, "Real World Haptic Exploration for Telepresence of the Visually Impaired," *Proceedings of the ACM/IEEE International Conference on Human Robot Interaction (HRI 2012)*, pp. 65-72, Boston, MA, U.S.A., 2012 (**acceptance rate: 25%**).

6. **Chung Hyuk Park**, Sekou Remy, and Ayanna M. Howard, "Visualize Your Robot with Your Eyes Closed: A Multi-modal Interactive Approach Using Environmental Feedback," *2011 IEEE Proceedings of the International Conference on Robotics and Automation (ICRA 2011)*, pp. 1368-1373, Shanghai, China, May 2011.

5. **Chung Hyuk Park**, Jae Wook Yoo, and Ayanna M. Howard, "Transfer of Skills between Human Operators through Haptic Training with Robot Coordination," *2010 IEEE Proceedings of the International Conference on Robotics and Automation (ICRA 2010)*, pp. 229-235, Anchorage, Alaska, U.S.A., May 2010.

4. **Chung Hyuk Park** and Ayanna M. Howard, "Towards Real-Time Haptic Exploration using a Mobile Robot as Mediator," *IEEE Proceedings of the Haptics Symposium (HAPTICS 2010, formerly known as the Symposium on Haptic Interfaces for Virtual Environments and Teleoperator Systems)*, pp. 289-292, Boston, U.S.A., Mar. 2010.

3. Sekou Remy, **Chung Hyuk Park**, and Ayanna M. Howard, "Improving the Performance of ANN Training with an Unsupervised Filtering Method," *Proceedings of the International Joint Conference on Neural Networks*, pp. 2627-2633, Atlanta, GA, June 2009.

2. **Chung Hyuk Park** and Ayanna M. Howard, "Vision-based Force Guidance for Improved Human Performance in a Teleoperative Manipulation System," *Proceedings of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS 2007)*, pp. 2126-2131, San Diego, CA, U.S.A., 2007.

1. Ayanna M. Howard and **Chung Hyuk Park**, "Haptically Guided Teleoperation for Learning Manipulation Tasks," *Robotics, Science & Systems: Workshop on Manipulation for Human Environments*, Atlanta, Georgia, U.S.A., June 2007.

CONFERENCE ABSTRACTS AND WORKSHOPS (REFEREED)

22. Mariia Sidulova and **Chung Hyuk Park**, "Towards Explainable Diagnosis of Alzheimer's Disease and MCI" presented at the International Conference on Intelligent Robots and Systems (IROS 2020), Workshop on Social AI for Human-Robot Interaction of Human-care Service Robots, 2020.

21. Juyoun Park and **Chung Hyuk Park**, "Trust Learning for Initiating Physical Human Robot Interaction," presented at the International Conference on Robotics and Automation: Workshop on Physical Human-Robot Interaction (pHRI), 2020.

20. Baijun Xie and **Chung Hyuk Park**, "Deep Spectrogram Learning of Emotional States in Music and Application to ASD Therapies," 2019 Biomedical Engineering Society (BMES) Annual Meeting, Philadelphia, U.S.A., October, 2019.

19. WonHyong Lee and **Chung Hyuk Park**, "Personalizable Real-Time Hand Gesture Registration and Classification Framework for Robot Control," presented at the 12th IFAC Conference on Control Applications in Marine Systems, Robotics, and Vehicles (CAMS 2019) and the first workshop on Robot Control (WROCO 2019).

18. **Chung Hyuk Park**, Hifza Javed, and Myounghoon Jeon, "Therapeutic robots in the wild: Perils of delivering autism interventions in the real world," Workshop on Dangerous HRI: Testing Real-World Robots has Real-world Consequences at the ACM/IEEE International Conference on Human Robot Interaction, 2019.

17. Hifza Javed, WonHyong Lee, and **Chung Hyuk Park**, "Robot-Assisted Socio-Emotional Intervention Framework for Children with Autism Spectrum Disorder and Its Applications," Workshop on Social Human-Robot Interaction of Human-Care Service Robots at the ACM/IEEE International Conference on Human Robot Interaction, 2019.

16. Hifza Javed and **Chung Hyuk Park**, "Implementing Adaptable Robot-Mediated Behavior Interventions for ASD: Motivation and Challenges," Extended Abstract (Poster presentation), Robotics: Science and Systems, 2018.

15. Hifza Javed and **Chung Hyuk Park**, "Understanding Emotional Expression with a Humanoid Robot: A Pilot Study," Extended Abstract (Poster presentation), BMES Annual Meeting, 2018.

14. Daniel M. Lofaro, Frank Lee, Edgar Endress and **Chung Hyuk Park**, "Augmented Musical Reality via Smart Connected Pianos," in the 2018 ICRA Workshop on Robotics in Virtual Reality, 2018 IEEE International Conference on Robotics and Automation, May 2018, Brisbane, Australia.

13. S. Maryam Fakhr, Hosseini, Dylan Lettinga, Eric Vasey, Zhi Zheng, Myounghoon Jeon, **Chung Hyuk Park**, and Ayanna M. Howard. "Both ¡look and feel¡ matter: Essential factors for robotic companionship." In Robot and Human Interactive Communication (RO-MAN), 2017 26th IEEE International Symposium on, pp. 150-155. IEEE, 2017.

12. S. Maryam Fakhr Hosseini, Samantha Hilliger, Jaclyn Barnes, Myounghoon Jeon, **Chung Hyuk Park**, and Ayanna M. Howard. "Love at first sight: Mere exposure to robot appearance leaves impressions similar to interactions with physical robots." In Robot and Human Interactive Communication (RO-MAN), 2017 26th IEEE International Symposium on, pp. 615-620. IEEE, 2017.

11. **Chung Hyuk Park**, "Human-Robot Emotional Interaction Framework with Consensus-based Approach," Late Breaking Results (LBR), IEEE International Conference on Intelligent Robots and Systems (IROS): Workshop on Personal Robot Interaction, Dae-Jeon, Korea, 2016.

10. Rachael Bevill, Srineil Nizambad, **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard "Behavioral Learning and Imitation for Music-Based Robotic Therapy for Children with Autism Spectrum Disorder," IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2016): Workshop on Behavior Adaptation, Interaction and Learning for Assistive Robotics (BAILAR), New York, NY, August, 2016.

9. Rachael Bevill, Srineil Nizambad, **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard "Behavioral Analysis Automation for Music-Based Robotic Therapy for Children with Autism Spectrum Disorder," Extended Abstract, IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN 2016), New York, NY, August, 2016.

8. **Chung Hyuk Park**, "Consensus-based Emotional Interaction Model for Emotion Regulation through Human-Robot Interaction," Position Paper in the 2016 Robotics, Science, and Systems (RSS) Workshop on Socially and Physically Assistive Robotics for Humanity, Ann Arbor, MI, June 18, 2016.

7. **Chung Hyuk Park**, "Consensus-based Approach for Human-Robot Emotional Interaction," Late Breaking Research Report at the 2016 38th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC), 2016, Orlando, FL.

6. **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard. "Robotic Framework with Multi-modal Perception for Physio-Musical Interactive Therapy for Children with Autism," Extended abstract, The Fifth Joint IEEE International Conference on Development and Learning and on Epigenetic Robotics (ICDL-EpiRob), Providence, RI, August, 2015.

5. Hyungjung Kim, Tabassum Azad, **Chung Hyuk Park**, Myounghoon Jeon, and Ayanna M. Howard. "Towards Physio-Musical Interactive Robotic Therapy," Interactive Session, IEEE International Conference on Robotics and Automation (ICRA) 2015 Workshop on Rehabilitation Robotics and Human-Robot Interaction, Seattle, WA, May 26, 2015.

4. **Chung Hyuk Park**, Neetha Pai, Jayahasan Bakthavatchalam, Yaojie Li, Myounghoon Jeon, and Ayanna M. Howard, "Robotic Framework for Music-based Emotional and Social Engagement with Children with Autism," Extended abstract, Twenty-Ninth AAAI Conference on Artificial Intelligence (AAAI-15) - Workshop on Artificial Intelligence Applied to Assistive Technologies and Smart Environments, January 25, 2015.

3. Wooram Park, **Chung Hyuk Park**, Chih-Hung King, "Towards a Mobile Manipulation Telepresence Robot for Remote Physical Interaction," presented at an Interactive Session in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2014 Workshop on Assistive Robotics for Individuals with Disabilities: HRI Issues and Beyond, Chicago, Illinois, U.S.A., September 2014.

2. William Lehman, Ruimin Zhang, Seyedeh M. Fakhrhosseini, Myounghoon Jeon, and **Chung Hyuk Park**, "Design of a social robot for affective recognition learning of children with autism spectrum disorders," Proceedings of the Upper Peninsula Interdisciplinary Student Research Conference (UPISRC-2014), p.11, MI: Houghton, 2014. Available from: https://sites.google.com/a/mtu.edu/upirs/

1. **Chung Hyuk Park**, "Haptic training for STEM education using light-based illusion and point-cloud based haptic rendering," demonstrated in IEEE Haptics Symposium'14, Houston, Texas, February 2014.

PRESENTATIONS

Invited Speaker, Special Seminar on Robotics and AI for Future Health, Jeonbuk National University, November, 2021.

Invited Speaker, Special Seminar at the Yonsei Digital Mental Health Lab, August 12, 2021.

Lightning Talk Speaker at Monthly HART TG Conversation Events, August 10, 2021.

Special Lecture, DNA (Dream Art) School (online), April, 2021.

Invited Speaker, TEDx Pearl Street (Theme: "Leading Change"). July 18, 2020.

Invited Speaker, U.Mass Lowell Robotics Seminar, May, 2020.

Invited Speaker, GW WOW-TALK (What's Our Work), "From Social Robots for Children to Therapeutic Robotic Assistance," Feb. 5, 2020.

Invited Speaker, UDC Center for Biomechanical & Rehabilitation Engineering (CBRE), Feb. 4, 2020.

Invited Speaker, SNU Robot Festival, April, 2019.

Invited Speaker, Univ. Connecticut BME Seminar. April 30, 2018.

Invited Speaker in the RSS Workshop on Perception and Interaction Dynamics in Child-Robot Interaction at the Annual Robotics, Science and Systems (RSS'17), Cambridge, Massachusetts, U.S.A. July 12-16, 2017.

Invited Speaker at the KOCSEA Technical Symposium, Vienna, VA, U.S.A., 2016.

Special Lecture, Youth Project at the Korean Community Service Center of Greater Washington, Summer, 2016.

Chung Hyuk Park, "Human-Robot Emotional Interaction Framework with Consensus-based Approach," Poster presentation, IEEE International Conference on Intelligent Robots and Systems (IROS): Workshop on Personal Robot Interaction, Dae-Jeon, Korea, 2016.

Rachael Bevill, Chung Hyuk Park, Hyung Jung Kim, JongWon Lee, Ariana Rennie, Myounghoon Jeon, and Ayanna Howard, "Interactive Robotic Framework for Multi-sensory Therapy for Children with Autism Spectrum Disorder," Poster presentation, IEEE International Conference on Intelligent Robots and Systems (IROS): Workshop on Personal Robot Interaction, Dae-Jeon, Korea, 2016.

Chung Hyuk Park, "Multi-modal Robotic Framework for Social and Emotional Interaction for Children with Autism Spectrum Disorder," Invited Talk, EMBC 2016 Workshop: Research on Children Development: New Perspectives and Tools, August 16, 2016.

Chung Hyuk Park, "Multi-modality in Assistive Robotics and Robotic Learning for Human-Robot Interaction and Biomedical Applications," Invited Lecture (Prof. S.Y. Jung), University of Texas Arlington, January, 2016.

Chung Hyuk Park, "Multi-modality in Human-Robot Interaction and Assistive Robotics," Invited Lecture, Computational Aspects of Robotics (Prof. Peter Allen), Columbia University, New York, November 25, 2014.

Chung Hyuk Park, "The Multi-modality in Human-Robot Interaction, Assistive Robotics, and Robot Learning and Humanized Intelligence," New York Chapter of IEEE Systems, Man, Cybernetics (SMC) Society Seminar Series, Long Island University Brooklyn Campus, New York, March 20, 2014.

Chung Hyuk Park, Kenneth Wilson, and Ayanna M. Howard, "Low-Cost Interactive Virtual Reality Simulator for Medical Surgery Training – A Case Study on Laparoscopic Cholecystectomy," US-KOREA Conference 2013 (UKC2013), East Rutherford, NJ, August, 2013.

Chung Hyuk Park, Rayshun Dorsey, and Ayanna M. Howard, "ARoPability: Accessible Robot Programming for Students with Disabilities," 31st Annual Closing The Gap Conference, Minneapolis, MN, U.S.A., October, 2012.

Chung Hyuk Park, "3D Realtime Haptic Rendering from Kinect," Demonstration for the HRI Program Chair meeting, Atlanta, GA, November 16, 2011.

Chung Hyuk Park and Ayanna M. Howard, "Haptic Fusion of Multi-modal Interaction through a Mobile Manipulation Robotic System," Georgia Tech Robotics and Imtelligent Machines (RIM) poster session, July 2011.

Chung Hyuk Park, "Haptic Modality for Skill Transfer and Fusion of Multi-modal Environmental Perception," KITECH, SuWon, Korea, June 2011.

Chung Hyuk Park, "Real World Haptic Fusion with Mobile Manipulator Robotic System," HumAnS Lab. Seminar to Samsung Electronics, Atlanta, GA, December 8, 2010.

Chung Hyuk Park, Jae Wook Yoo, and Ayanna M. Howard, "Transfer of Skills between Human Operators through Haptic Training with Robotic Coordination," Decision & Control Student Symposium, Atlanta, GA, April 23, 2010.

Chung Hyuk Park, "Human-Automation Systems (HumAnS) Research Group Presentation," GEDC/GTAC Industry Review, October 22, 2008.

Chung Hyuk Park and Ayanna M. Howard, "Learning of Human Manipulability through Visual and Haptic Guidance," GEDC/GTAC Industry Review, October 2007.

Ayanna M. Howard and Chung Hyuk Park, "Haptically Guided Teleoperation for Learning Manipulation Tasks," Robotics, Science & Systems: Workshop on Manipulation for Human Environments, Atlanta, Georgia, June 2007.

Presentations to "Lab-tour" groups from: Virginia Tech.(Prof. Dennis Hong), Kimberly&Clark, RoMan Conference, School of ECE Board members, local High schools, etc.

PATENTS

Chung Hyuk Park, Hifza Javed, "Robot-aided system and method for diagnosis of autism spectrum disorder," U.S. Patent Application 17159691, submitted on 8/5/2021.

Chung Hyuk Park, "Emotional interaction apparatus," U.S. Patent No. 10,593,349 issued on 8/2/2020.

Chung Hyuk Park, "Robot-Aided System and Method for Detection of Autism Spectrum Disorder in Children," US Provisional Patent App. 62/967,873, Filed on 1/30/2020.

Chung Hyuk Park, et al., "Personal Wireless Hand-Held Terminal using ZigBee Protocol", Patent of Korea, 2005.

Chung Hyuk Park, et al., "Traffic Light Control System using DSRC", KR 10-2005-0093517, 2004.

Chung Hyuk Park, et al., "Method of a System Bus Controller in a Reconfigurable Embedded System", KR 10-2005-0040397, 2003.

MEDIA COVERAGE

"Unlocking Your Inner Robot" Invited speaker at the Inaugural Event of TEDx Pearl Street (Theme: "Leading Change"). July 18, 2020.

"Young Robotics Investigator Interview: Dr. Chung Hyuk Park, Assistant Professor at The George Washington University," June 27, 2018, iRobot News(in Korean), June 21, 2018.

"[Arirang Special] Smart with Heart," by KY Moon, Arirang TV Network, aired on March 27, 2017.
Video URL: https://youtu.be/gHa4ddmdCUU

"Can a Robot Help Kids with Autism Navigate Social Situations?" GW Today, April 06, 2016.
URL: https://gwtoday.gwu.edu/can-robot-help-kids-autism-navigate-social-situations
Video URL: https://vimeo.com/159815687

"Robot helps social skills for autistic children," by Xiumei Dong and Yunfei Zhao, Medill News Service. Appeared in USA Today, April 26, 2016.
URL: http://www.usatoday.com/story/news/politics/2016/04/26/robot-helps-social-skills-autistic-children/83554568/

"Challenging for the Treatment of ASD with Robots" (in Korean) Introduction of our USA Today article in IRobotNews.
URL:http://www.irobotnews.com/news/articleView.html?idxno=7418

"5 Promising Robots for Kids with Autism." By Steve Crowe in Robot Trends, May 3, 2016.
URL: http://www.roboticstrends.com/photo/5_promising_robots_for_kids_with_autism/3

"Researcher builds robot to help autistic children," by Lillianna Byington, The GW Hatchet, April 17, 2016.
http://www.gwhatchet.com/2016/04/17/researcher-builds-robot-to-help-autistic-children/

"Meet the robot built to help autistic children improve their social skills," by Jessica Hawarth, April 18, 2016.
URL: http://www.mirror.co.uk/news/world-news/meet-robot-built-help-autistic-7779563

"What is it like to have autism?" Short video clip featured on April 30, 2016. Different Brains: The NeuroDiversity Community for All of Us.
URL: http://differentbrains.com/matthew-ryan-week-neurodiversity-bruno-mars/

Voice of America. Filmed and under editing.

AWARDS & HONORS

2022 Technology Commercialization Innovation Competition (People's Choice), AI-Driven Real-time Nerve Detection and Visualization for Surgical Precision, GW TCO, 2022

GW BME Capstone Design Award: First Place. Fatima Tourk, Dasom Lee, Khanh Nguyen, and Michael Pressler. Project Title: "A Sensing Brace for Patellofemoral Pain Syndrome," 2021.

GW SEAS Junior Faculty Research Award, 2019.

Late Breaking Reports Award 2nd Prize, "Humanoid Therapy Robot for Encouraging Exercise in Dementia Patients," ACE/IEEE International Conference on Human-Robot Interaction, 2019.

AccelerateGW I-CORPS grant, "Robot-Assisted Socio-Emotional Intervention Framework for Children with Autism Spectrum Disorder," GW SEAS R&D Showcase, 2018.

Innovation and Entrepreneurship Prize, "A Robotic Framework to Overcome Sensory Overload in Children with Autism Spectrum Disorder: A Pilot Study," GW Research Days, 2017.

2019 Pelton Award for Outstanding Senior Project: Second Place. Nathan Campbell, Ria Kim, John Schloen and Samantha Horton, Project Title: ""Ultrasound Robot."

Whitaker International Program Fellowship, Rachael Bevill (Mentor: Chung Hyuk Park), One year stay and research in Max Planck Institute (MPI), 2017-2018.

Summer Undergraduate Program in Engineering Research (SUPER) scholarship, Paul Azzi (Mentor: Chung Hyuk Park), $3,000, 2017.

Invention & Entrepreneurship Award, Scott Downen et al. (Mentor: Chung Hyuk Park), $2,000, GW Research Days 2017.

Invention & Entrepreneurship Award, Hifza Javed et al. (Mentor: Chung Hyuk Park), $2,000, GW Research Days 2017.

GW SEAS SUPER Summer Research Scholarship, Samuel Cohen (Mentor: Chung Hyuk Park), $6,000 ($3,000 matching fund), May 2016.

GW Research Days, Biomedical Engineering Poster award (Undergrad 1st place), Srineil Nizambad, Matthew Spadafora, Paul Azzi, Conor Sheridan, Rachael Bavill (Mentor: Chung Hyuk Park), April 2016.

GWIBE Undergraduate Research Scholarship, Srileil Nizambad (Mentor: Chung Hyuk Park), $6,000, January 2016.

Received Travel Award to *2010 IEEE ICRA*, Anchorage, U.S.A. *May 2010*

Invited to the *2009 HRI Young Pioneers Workshop*, San Diego, U.S.A. *March 2009*

Received *LG Electronics Best R&D TDR Award* *April 2005*

Received *LG Electronics Scholarship (LG Electronics Honor Student)* *2000 – 2001*

TECHNICAL SKILLS

Programming Languages: C/C++, C#, Python, Java, Basic, HTML/XML, LISP, Assembler

Simulators & Opensource library: ROS, Player/Gazebo, Microsoft Robotics Studio, OpenCV

Engineering Tools: Microsoft Visual Studio, MATLAB, PSpice, MINITAB, VHDL/VERILOG design, FPGA programming, AutoCAD

Applications: Microsoft Office, LaTeX, and other common productivity packages for Windows and Linux platforms

Operating Systems: Microsoft Windows, MacOS, iOS/Android, Linux and other UNIX variants

PROFESSIONAL SERVICES

Thesis advisement:

- Ph.D. Thesis Advisement: Hifza Javed (BME), scheduled to defend in Summer 2021.
- Master Thesis Advisement: Rachael Bevill (BME), Jaclyn Barnes (MTU-CS), Scott Downen (BME), Meixin Wang (MAE).
- BME Qualifying Exam Committee: Baichen Li (BME), Hifza Javed (BME), Tara Diba (BME).
- Ph.D. Thesis Committee: Quan Dong (BME, 2021), Baichen Li (BME,2021), Shankar Kulumani (MAE), Evan Kaufman (MAE), Kyle Crandall (MAE).

National Science Foundation (NSF) Review Panels.

National Institutes of Health (NIH) Study Sections.

Department of Education Review Panels.

Editorial Services in Journals:

- Topic Editor in *Frontiers Robotics and AI*, Special Topic: Contextualized Affective Interactions with Robots. *2020–Present*
- Topic Editor in *Frontiers Robotics and AI*, Special Topic: Social Human-Robot Interaction (sHRI) of Human-Care Service Robots. *2020–Present*
- Topic Editor (Lead) in *Frontiers Robotics and AI*, Special Topic: Towards Real World Impacts: Design, Development, and Deployment of Social Robots in the Wild. *2018–2020*
- Guest Associate Editor in *Frontiers: Biomedical Robotics*.
- Guest Associate Editor in *Frontiers: Emotion Science*.
- Guest Associate Editor in *Frontiers: Human-Robot Interaction*.
- Review Editor in *Frontiers in Neurorobotics*
- Review Editor in *Frontiers in Bionics and Biomimetics* (specialty section of Frontiers in Bioengineering and Biotechnology and Frontiers in Robotics and AI).
- Guest Editor (GE) in a Special Section in the *IEEE Trans. Industrial Informatics* (EIC: Prof. Ren Luo). *2018–2019*
- Guest Editor (GE) in the *AUTONOMOUS ROBOTS* - Special Issue on Assistive and Rehabilitation Robotics, Springer, 2017.

Editorial and Committee Services in International Conferences:

- Senior Editor (SE) in the Program Committee (PC), Ubiquitous Robotics (UR), 2021.
- Associate Editor (AE) in the Program Committee (PC) of the IEEE International Conference on Robot and Human Interactive Communication (Ro-Man) 2017, 2021.
- Organizing Committee (OC) for the ACM/IEEE International Conference on Human-Robot Interaction (HRI) 2019.
- Organizing Committee (Registration Chair) for the ACM/IEEE International Conference on Human-Robot Interaction (HRI) 2018, Chicago, IL.
- Organizing Committee (Poster Session Co-Chair) at URAI'17, Jeju Island, Republic of Korea.
- Associate Editor (AE) for the Program Committee (PC) of the 2017 IEEE International Workshop on Advanced Robotics and its Social Impacts, ARSO 2017.
- Special Sessions Chair, The 8th International Conference on Social Robotics (ICSR), 2016.
- Haptic Session Chair, IEEE International Symposium on Robot and Human Interactive Communication (RO-MAN) 2016.
- Co-organizer of the IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2014 Workshop on Assistive Robotics for Individuals with Disabilities: HRI Issues

and Beyond (11 invited speakers, 16 contributed papers with less than 70% acceptance rate, and more than 50 attendees).

School-wide and Departmental Services:

- GW SEAS Diversity, Equity, and Inclusion (DEI) Committee, in part of SEAS's Strategic Planning. *2021–Present*
  GW BME Diversity, Equity, and Inclusion (DEI) Committee. *2021–Present*
- GW BME Research and Graduate Affairs Committee. *2021–Present*
- GW Carbonell ANDI Director Search Committee. *2019–2020*
- GW BME Faculty Search Committee. *2017, 2018, 2020*
- GW CS Faculty Search Committee (External member). *2018, 2019*
- Organizer for the GW BME Distinguished Lecture Series. *2016–Present*
- GW BME Curriculum Committee. *2016–Present*
- GW SEAS R&D Showcase Judge committee. *2016–Present*
- Referee for GW SEAS R&D Showcase. *2016–Present*
- GW SEAS Computing Committee. *2016–2018*
- Organizer for the GW BME Days. *2016–2018*

Reviewer for Journals and International Conferences:

- Scientific Reports, Springer. *2019–Present*
- Frontiers, Robotics and Artificial Intelligence. *2019–Present*
- Journal of Ambient Intelligence and Humanized Computing. *2019–Present*
- IEEE Transactions on Systems, Man, & Cybernetics: Systems. *2012–Present*
- IEEE International Journal on Human-Robot Interaction (JHRI). *2012–Present*
- Journal of Intelligent and Robotic Systems (JINT). *2012–Present*
- IEEE Journal of Biomedical and Health Informatics (JBHI). *2013–Present*
- International Journal of Precision Engineering and Manufacturing (JPEM). *2014–Present*
- ACM/IEEE International Conference on Human Robot Interaction (HRI). *2010–Present*
- IEEE Haptics Symposium. *2010–Present*
- IEEE International Conference on Robotics and Automation (ICRA). *2008–Present*
- IEEE International Conference on Intelligent Robots and Systems (IROS). *2008–Present*

Reviewer for President's Undergraduate Research Awards (PURA) at Georgia Institute of Technology, 2011 Fall.

Student volunteer for the following international conferences:

- IEEE International Symposium on Robot and Human Interactive Communication (Ro-Man). *July 2011*
- INNS/IEEE International Joint Conference on Neural Networks. *Jul. 2009*
- Robotics: Science and Systems(RSS) Conference. *Jul. 2007*

Session Chair for Decision & Control Student Symposium. *Apr. 2011*

Robotic Programming Session Leader for NFB Summer Camps and CVI Summer Camps. (Atlanta, Cleveland, Baltimore, Denver, and Berkeley) *2010–2012*

Referee for the FIRST LEGO League(FLL) in Atlanta, GA. *Jan. 2007*

Organizing Committee for the 19th & 20th Korea MicroRobot Contest. *2000, 2001*