

Hae-Won Park, Ph.D.

CONTACT INFORMATION	291, Daehak-ro, Yuseong-gu, Daejeon, Korea 34141 82-42-350-8901, haewonpark@kaist.ac.kr	
PROFESSIONAL EXPERIENCE	Associate Professor Mechanical Engineering, Korea Advanced Institute of Science and Technology	Mar 2022 to present
	Assistant Professor Mechanical Engineering, Korea Advanced Institute of Science and Technology	Feb 2019 to Feb 2022
	Director Humanoid Robot Research Center, Korea Advanced Institute of Science and Technology	Feb 2020 to present
	Assistant Adjunct Professor Mechanical Science and Engineering, University of Illinois at Urbana-Champaign	Feb 2019 to Feb 2022
	Assistant Professor Mechanical Science and Engineering, University of Illinois at Urbana-Champaign	Sep 2015 to Feb 2019
	Assistant Professor (affiliate appointment) Coordinated Science Laboratory, University of Illinois at Urbana-Champaign	Sep 2017 to Feb 2019
	Research Scientist Mechanical Engineering, Massachusetts Institute of Technology Supervisor: Sangbae Kim, Ph.D	June 2014 to June 2015
	Postdoctoral Associate Mechanical Engineering, Massachusetts Institute of Technology Supervisor: Sangbae Kim, Ph.D	June 2012 to June 2014
	Research Assistant Mechanical Engineering, University of Michigan at Ann Arbor Supervisor: Jessy Grizzle, Ph.D	Sep 2007 to Apr 2012
	Research Assistant Mechanical Engineering, Yonsei University Supervisor: Young-Pil Park, Ph.D	Feb 2005 to Feb 2007
EDUCATION	University of Michigan , Ann Arbor, MI Ph.D., Mechanical Engineering, May 2012 <ul style="list-style-type: none">• Thesis: <i>Control of a Bipedal Robot Walker on Rough Terrain</i>• Advisor: Jessy Grizzle, Ph.D Yonsei University , Seoul, Korea M.S., Mechanical Engineering, Feb 2007 <ul style="list-style-type: none">• Thesis: <i>Design, Analysis, and Experiment of a Dolphin Robot</i>• Advisor: Young-Pil Park, Ph.D Yonsei University , Seoul, Korea B.S., Mechanical Engineering, Feb 2005 <ul style="list-style-type: none">• Thesis: <i>Design of a Small Size Six-Legged Walking Robot Using Electromagnet Actuators</i>• Advisor: Hyun-Seok Yang, Ph.D	

1. Ziwon Yoon, Joon-Ha Kim, **Hae-Won Park (Corresponding Author)**, “Invariant Smoother for Legged Robot State Estimation with Dynamic Contact Event Information,” *IEEE Transactions on Robotics*, accepted, 2023
2. Donghoon Youm, Hyunyong Jung, Hyeongjun Kim, Jemin Hwangbo, **Hae-Won Park (Corresponding Author)**, Sehoon Ha, “Imitating and Fine-tuning Model Predictive Control for Robust and Symmetric Quadrupedal Locomotion,” *IEEE Robotics and Automation Letters*, 8(11): 7799-7806, 2023
3. JongHun Choe, Joon-Ha Kim, Seungwoo Hong, Jinoh Lee, **Hae-Won Park (Corresponding Author)**, “Seamless Reaction Strategy for Bipedal Locomotion Exploiting Real-Time Nonlinear Model Predictive Control,” *IEEE Robotics and Automation Letters*, 8(8): 5031-5038, 2023
4. Seungwoo Hong, Yong Um, Jaejun Park, **Hae-Won Park (Corresponding Author)**, “Agile and versatile climbing on ferromagnetic surfaces with a quadrupedal robot,” *Science Robotics*, 7(73): eadd1017, 2022 **Cover article on December 2022 Issue.**
5. Buyoun Cho, Sung-Woo Kim, Seunghoon Shin, Jun-Ho Oh, Hyung-Soon Park, **Hae-Won Park (Corresponding Author)**, “Energy-efficient hydraulic pump control for legged robots using model predictive control,” *IEEE/ASME Transactions on Mechatronics*, published online, 2022
6. Yeeun Kim, Byeongho Yu, Eungchang Mason Lee, Joon-Ha Kim, **Hae-Won Park**, Hyun Myung “STEP: State Estimator for Legged Robots Using a Preintegrated Foot Velocity Factor,” *IEEE Robotics and Automation Letters*, 7(2): 4456-4463, 2022
7. Joon-Ha Kim, Seungwoo Hong, Gwanghyeon Ji, Seunghun Jeon, Jemin Hwangbo, Jun-Ho Oh, **Hae-Won Park (Corresponding Author)**, “Legged Robot State Estimation with Dynamic Contact Event Information,” *IEEE Robotics and Automation Letters*, 6(4): 6733-6740, 2021
8. Buyoun Cho, Min-Su Kim, Sung Woo Kim, Seunghoon Shin, Jeong Yeseong, Jun-Ho Oh, **Hae-Won Park (Corresponding Author)**, “Design of a Compact Embedded Hydraulic Power Unit for Bipedal Robots,” *IEEE Robotics and Automation Letters*, 6(2): 3631-3638, 2021
9. Sungwoo Kim, Buyoun Cho, Seunghoon Shin, Jun-Ho Oh, Jemin Hwangbo, **Hae-Won Park (Corresponding Author)**, “Force Control of a Hydraulic Actuator with a Neural Network Inverse Model,” *IEEE Robotics and Automation Letters*, 6(2): 2814-2821, 2021
10. Yanran Ding, Abhishek Pandala, Chuanzheng Li, Young-Ha Shin, **Hae-Won Park (Corresponding Author)**, “Representation-Free Model Predictive Control for Dynamic Motions in Quadrupeds,” *IEEE Transactions on Robotics*, 37(4): 1154-1171, 2021
11. **Hae-Won Park**, Patrick Wensing, Sangbae Kim, “Jumping over Obstacles with MIT Cheetah 2,” *Robotics and Autonomous Systems*, 136: 103703, 2020
12. Chuanzheng Li, Yanran Ding, **Hae-Won Park (Corresponding Author)**, “Centroidal-momentum-based trajectory generation for legged locomotion,” *Mechatronics*, 68: 102364, 2020
13. Abhishek Pandala, Yanran Ding, **Hae-Won Park (Corresponding Author)**, “qpSWIFT : A Real-time Sparse Quadratic Program Solver for Robotic Applications,” *IEEE Robotics and Automation Letters*, 4(4): 3355-3362, 2019

14. Won Dong Shin, Jaejun Park, **Hae-Won Park (Corresponding Author)**, “Development and Experiments of a Bio-inspired Robot with Multi-mode in Aerial and Terrestrial Locomotion,” *Bioinspiration & Biomimetics*, 14(5):056009, 2019
15. Jaejun Park, Do Hun Kong, and **Hae-Won Park (Corresponding Author)**, “Design of Anti-skid Foot with Passive Slip Detection Mechanism for Conditional Utilization of Heterogeneous Foot Pads,” *IEEE Robotics and Automation Letters*, 4(2):1170–1177, 2019.
16. **Hae-Won Park**, Patrick Wensing, and Sangbae Kim, “High-Speed Bounding with the MIT Cheetah 2: Control Design and Experiments,” *International Journal of Robotics Research*, 36(2):167–192, 2017.
17. **Hae-Won Park** and Sangbae Kim, “Quadrupedal Galloping Control for a Wide Range of Speed via Vertical Impulse Scaling,” *Bioinspiration & Biomimetics*, 10(2):025003, 2015.
18. **Hae-Won Park** and Sangbae Kim, “The MIT Cheetah, an Electrically-powered Quadrupedal Robot for High-speed Running,” *Journal of the Robotics Society of Japan*, 32(4):323–328, 2014.
19. **Hae-Won Park**, Alireza Ramezani, and J.W. Grizzle, “A Finite-state Machine for Accommodating Unexpected Large Ground Height Variations in Bipedal Robot Walking,” *IEEE Transaction on Robotics*, 29(2):331–345, 2013.
20. Koushil Sreenath, **Hae-Won Park**, and J.W. Grizzle, “Embedding Active Force Control within the Compliant Hybrid Zero Dynamics to Achieve Stable, Fast Running on MABEL,” *International Journal of Robotics Research*, 32(3):324–345, 2013.
21. **Hae-Won Park**, Koushil Sreenath, Jonathan W. Hurst, and J.W. Grizzle, “Identification of a Bipedal Robot with a Compliant Drivetrain: Parameter Estimation for Control Design,” *IEEE Control Systems Magazine*, 31(2):63–88, 2011. **Cover article on April 2011 issue.**
22. Koushil Sreenath, **Hae-Won Park**, Ioannis Poulakakis, and J.W. Grizzle, “A Compliant Hybrid Zero Dynamics Controller for Stable, Efficient and Fast Bipedal Walking on MABEL,” *International Journal of Robotics Research*, 30(9):1170–1193, 2011.

DOMESTIC
JOURNAL
PUBLICATIONS

1. Buyoun Cho, Kim Sung Woo, Shin Seunghoon, Kim Min-Su, Jun-Ho Oh, **Hae-Won Park (Corresponding Author)**, “Energy Efficient Control of Onboard Hydraulic Power Unit for Hydraulic Bipedal Robots,” *Journal of Korea Robotics Society*, 16(2):86–93, 2020

PEER-REVIEWED
INTERNATIONAL
CONFERENCE
PROCEEDINGS

1. Min-Gyu Kim, Hyun-Bin Kim, **Hae-Won Park (Corresponding Author)**, “based Path Planning for Legged Robots,” *2022 International Conference on Robot Intelligence Technology and Applications*, Gold Coast, Australia, December, 2022. **Best Paper Award Finalist.**
2. Tae-Gyu Song, Young-Ha Shin, Seungwoo Hong, Hyungho Chris Choi, Joon-Ha Kim, **Hae-Won Park (Corresponding Author)**, “DRPD, Dual Reduction Ratio Planetary Drive for Articulated Robot Actuators,” *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Kyoto, Japan, October, 2022.
3. Gijeong Kim, Dongyun Kang, Joon-Ha Kim, **Hae-Won Park (Corresponding Author)**, “Contact-Implicit Differential Dynamic Programming for Model Predictive Control with Relaxed Complementarity Constraints,” *2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Kyoto, Japan, October, 2022.

4. Lorenzo Amatucci, Joon-Ha Kim, Jemin Hwangbo, **Hae-Won Park (Corresponding Author)**, “Monte Carlo Tree Search Gait Planner for Non-Gaited Legged System Control ,” *2022 IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, USA, May, 2022.
5. Young-Ha Shin, Seungwoo Hong, Sangyoung Woo, JongHun Choe, Harim Son, Gi Jeong Kim, Joon-Ha Kim, Kang Kyu Lee, Jemin Hwangbo, **Hae-Won Park (Corresponding Author)**, “Design of KAIST HOUND, a Quadruped Robot Platform for Fast and Efficient Locomotion with Mixed-Integer Nonlinear Optimization of a Gear Train ,” *2022 IEEE International Conference on Robotics and Automation (ICRA)*, Philadelphia, USA, May, 2022.
6. Joo Woong Byun, Donghoon Youm, Seunghoon Jeon, Jemin Hwangbo, **Hae-Won Park (Corresponding Author)**, “Learning Footstep Planning for the Quadrupedal Locomotion with Model Predictive Control ,” *2021 International Conference on Robot Intelligence Technology and Applications*, Daejeon, Korea, December, 2021.
7. JongHun Choe, Jun-Ho Oh, **Hae-Won Park (Corresponding Author)**, “2-DOF Rolling Joint with the Novel Interior Reinforcement Structures ,” *2021 International Conference on Robot Intelligence Technology and Applications*, Daejeon, Korea, December, 2021. **Best Student Paper Award.**
8. Min-Gyu Kim, Seungwoo Hong, Joon-Ha Kim, **Hae-Won Park (Corresponding Author)**, “Design of Foothold Decision Model in Convex Model Predictive Control for Legged Robots ,” *2021 International Conference on Robot Intelligence Technology and Applications*, Daejeon, Korea, December, 2021.
9. Soonpyo Kwon, Juwoong Byun, **Hae-Won Park (Corresponding Author)**, “Elimination of Race Condition During GPU Acceleration of Probabilistic Height Map ,” *2021 International Conference on Robot Intelligence Technology and Applications*, Daejeon, Korea, December, 2021.
10. Seung-Woo Hong, Joon-Ha Kim, **Hae-Won Park (Corresponding Author)**, “Real-Time Constrained Nonlinear Model Predictive Control on SO(3) for Dynamic Legged Locomotion ,” *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV, Nov 2020. **Robocup Best Paper award.**
11. Yanran Ding, Chauanzheng Li, **Hae-Won Park (Corresponding Author)**, “Kinodynamic Motion Planning for Multi-Legged Robot Jumping Via Mixed-Integer Convex Program ,” *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Las Vegas, NV, Nov 2020.
12. Okkee Sim, Hyobin Jeong, Jaesung Oh, Moonyoung Lee, Kang Kyu Lee, **Hae-Won Park**, Jun-Ho Oh, “Joint Space Position/Torque Hybrid Control of the Quadruped Robot for Locomotion and Push Reaction ,” *2020 IEEE International Conference on Robotics and Automation (ICRA)*, Paris, France, May 2020.
13. Yanran Ding, Abhishek Pandala, and **Hae-Won Park (Corresponding Author)**, “Real-time Model Predictive Control for Versatile Dynamic Motions in Quadrupedal Robots ,” *2019 IEEE International Conference on Robotics and Automation (ICRA)*, Montreal, Canada, May 2019.
14. Taekyoung Kim, Jaejun Park, Sohee John Yoon, Do Hun Kong, **Hae-Won Park**, Yong-Lae Park, “Design of a Lightweight Inflatable Sensing Sleeve for Increased Adaptability and Safety of Legged Robots,” *2019 IEEE International Conference on Soft Robotics (RoboSoft)*, Seoul, Korea, April 2019. **Best conference paper award.**

15. Yanran Ding and **Hae-Won Park (Corresponding Author)**, “Single Leg Dynamic Motion Planning with Mixed-Integer Convex Optimization,” *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, Oct 2018.
16. Won Dong Shin, Jae-jun Park, and **Hae-Won Park (Corresponding Author)**, “Bio-Inspired Design of a Gliding-Walking Multi-Modal Robot,” *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Madrid, Spain, Oct 2018.
17. Yanran Ding and **Hae-Won Park (Corresponding Author)**, “Design and Experimental Implementation of a Quasi-Direct-Drive Leg for Optimized Jumping,” *2017 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Vancouver, Canada, Sep 2017. **Best Student Paper Award Finalist**
18. **Hae-Won Park**, Patrick Wensing, and Sangbae Kim, “Online Planning for Autonomous Running Jumps Over Obstacles in High-Speed Quadrupeds,” *2015 Robotics Science and Systems (RSS)*, Rome, Italy, Jul 2015.
19. **Hae-Won Park**, Sangin Park, and Sangbae Kim, “Variable-speed Quadrupedal Bounding Using Impulse Planning: Untethered High-speed 3D Running of MIT Cheetah 2,” *2015 IEEE/RSJ International Conference on Robotics and Automation (ICRA)*, Seattle, WA, May 2015, 5163–5170.
20. **Hae-Won Park**, Meng Yee Chuah, and Sangbae Kim, “Quadruped Bounding Control with Variable Duty Cycle via Vertical Impulse Scaling,” *2014 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Chicago, IL, Sep 2014, 3245–3252.
21. **Hae-Won Park**, Koushil Sreenath, Alireza. Ramezani, and J. W. Grizzle, “Switching Control Design for Accommodating Large Stepdown Disturbances in Bipedal Robot Walking,” *2012 International Conference on Robotics and Automation (ICRA)*, St. Paul, MN, May 2012, 45–50.
22. Koushil Sreenath, **Hae-Won Park**, and J. W. Grizzle, “Design and Experimental Implementation of a Compliant Hybrid Zero Dynamics Controller with Active Force Control for Running on MABEL,” *2012 International Conference on Robotics and Automation (ICRA)*, St. Paul, MN, May 2012, 51–56.
23. Koushil Sreenath, **Hae-Won Park**, Ioannis Poulakakis, and J. W. Grizzle, “Design and experimental implementation of a compliant hybrid zero dynamics controller for walking on MABEL,” *2010 IEEE Conference on Decision and Control (CDC)*, Atlanta, GA, Dec 2010, 280–287.
24. Jeffrey Koncsol, **Hae-Won Park**, and Koushil Sreenath, “Real world issues with real-time control of Mabel: A platform for experimental control of bipedal locomotion,” *2010 IEEE-RAS International Conference on Humanoid Robots (Humanoids)*, Nashville, TN, Dec 2010, 659-664.
25. J.W. Grizzle, Jonathan Hurst, Benjamin Morris, **Hae-Won Park**, and Koushil Sreenath, “Mabel, A New Bipedal Walker and Runner,” *2009 American Control Conference (ACC)*, St. Louis, MO, Jun 2009, 2030–2036.

INTERNATIONAL
CONFERENCE
PROCEEDINGS

1. **Hae-Won Park**, Sung-Hyun Kim, No-Cheol Park, Hyun-Seok Yang, Young-Pil Park, Seung-Ho Kim, Yong-Heon Park, and Young-Hwan Kang, “Design of Tracked Vehicle with Passive Mechanism for Uneven Terrain,” *SICE-ICASE International Joint Conference*, 2006, 3132–3136.

DOMESTIC
CONFERENCE
PROCEEDINGS

1. Soonpyo Kwon, Seungwoo Hong, **Hae-Won Park**, “Swing Leg Planning for Avoiding Collision with Terrain Represented as Height Map,” *The Korea Robotics Society Annual Conference*, 2022
2. Donghoon Youm, Jemin Hwangbo, **Hae-Won Park**, “Reinforcement Learning with Imitation Learning from the MPC: Application to Legged Robots,” *The Korea Robotics Society Annual Conference*, 2022
3. Yeseong Jeong, Shin Seunghoon, Soonpyo Kwon, Buyoun Cho, Kim Sung Woo, Joon-Ha Kim, Jun-Ho Oh, **Hae-Won Park**, “Real-time Bilateral Teleoperation with Electric and Hydraulic Actuator,” *The Korea Robotics Society Annual Conference*, 2021
4. Soonpyo Kwon, Joon-Ha Kim, Juwoong Byun, **Hae-Won Park**, “GPU Acceleration of Probabilistic Local Height Map that Resolves Race Condition,” *The Korea Robotics Society Annual Conference*, 2021
5. Mingyu Kim, Seungwoo Hong, Joon-Ha Kim, **Hae-Won Park**, “Design of Foothold Optimization Model for Controlling Legged Robots,” *The Korea Robotics Society Annual Conference*, 2021
6. Soonpyo Kwon, Mingyu Kim, **Hae-Won Park**, Jun-ho Oh, “Design of an Under-actuated Robot Finger that Control Initial Contact Point by Activating the Passive Joint before Contact,” *The Korea Robotics Society Annual Conference*, 2020
7. JongHun Choe, Young-Ha Shin, **Hae-Won Park**, Jun Ho Oh, “Design Method of 2-DOF Rolling Motion Joint for Humanoid Shoulder Joint,” *The Korea Robotics Society Annual Conference*, 2020
8. Buyoun Cho, Minsu Kim, Sungwoo Kim, Seunghoon Shin, Jeasung Oh, **Hae-Won Park**, Jun-Ho Oh, “Mobile Pump Control for Energy-Efficient Driving of Hydraulic Actuators,” *The Korea Robotics Society Annual Conference*, 2020 **Best Paper Award**
9. Seok-Woo Kim, **Hae-Won Park**, Kang-Jin Cho, No-Cheol Park, Hyun-Suk Yang, and Young-Pil Park, “Straight Line Swimming Simulation and Experiment of Robotic Fish,” *The Korean Society for Precision Engineering Conference*, 2008, 569–570.
10. Seok-Woo Kim, **Hae-Won Park**, Kang-Jin Cho, No-Cheol Park, Hyun-Suk Yang, and Young-Pil Park, “Straight Line Swimming Simulation and Experiment of Robotic Fish,” *The Korean Society for Precision Engineering Conference*, 2008, 569–570.
11. Kang-Jin Cho, **Hae-Won Park**, Seok-Woo Kim, Hyun-Suk Yang, Young-Pil Park, and No-Cheol Park, “Development of a robot with fish locomotion,” *The Korean Society of Mechanical Engineers Conference*, 2007, 40–45.

TECHNICAL
REPORTS

1. **Hae-Won Park**, Koushil Sreenath, Jonathan Hurst, and J. W. Grizzle, “Identification and Dynamic Model of a Bipedal Robot with a Cable- Differential-Based Compliant Drivetrain,” *University of Michigan Control Group Report*, No. CGR 10-06, Mar 2010.

AWARDS

Cover Article, *Science Robotics*, December 2022
Best Paper Award Finalist, RiTA, 2022
KAIST Breakthroughs Readers’ Choice Award, 2022
Best Student Paper Award, RiTA, 2021 (Advising Student: JongHun Choe)
Early Career Spotlight, *Robotics: Science and Systems (RSS)*, 2021
IEEE Robotic Automation Society, TC Best Paper Award Finalist, Technical Committee for Model-based Optimization for Robotics, 2020

RoboCup Best Paper Award, IEEE IROS, 2020
 Best Paper Award, The Korea Robotics Society Annual Conference, 2020
 Research Prize, Outstanding Faculty Awards, KAIST, 2020
 Best Conference Paper Award, IEEE RoboSoft (Collaboration with Prof. Yong-Lae Park at SNU), 2019
 NSF CAREER Award, National Science Foundation, 2018
 IROS Best Student Paper Award Finalist, 2017 (Advising Student: Yanran Ding)
 The 2015 World Technology Awards Finalist, 2015
 Cover Article, IEEE Control Systems Magazine, 31(2), 2011

PRESENTATIONS

Conference Workshop

- Conference on Robot Learning (CoRL), Learning for Agile Robotics Workshop, “Agile Legged Robot Locomotion with Model Predictive Control and Reinforcement Learning”, Auckland, New Zealand 2022
- International Conference on Intelligent Robots and Systems (IROS), Impact-Aware Robotics workshop, “Optimization-based Design, Control, and Estimation for Dynamic Legged Locomotion”, Prague, Czech Republic 2021
- International Conference on Intelligent Robots and Systems (IROS), MIT Mini-Cheetah Workshop, “Trajectory Planning and Model Predictive Control for Dynamic Legged Locomotion”, Las Vegas, USA 2020
- IFAC Workshop on Robot Control (WROCO), Special Session, “Design of a Torque-Controlled Actuator for Dynamic Maneuvers of Legged Robots”, Daejeon, Korea 2019
- Ubiquitous Robots 2018, 2018 MOTIE/OSD Program Review/Workshop on Korea-US Disaster Relief Robots, “Adaptable Robot Platform (ASAP) for Humanitarian Assistance and Disaster Relief Hae Won Park”, Honolulu, USA 2018
- IEEE International Conference on Robotics and Automation (ICRA), Workshop on Which Torque Controlled Actuator Do I need? – On Criteria, Metrics and Experiments for Design, Selection and Comparison, “Design of a Torque-Controlled Actuator for Dynamic Maneuvers”, Brisbane, Australia 2018
- Workshop on Korea-US Disaster Relief Robot, “Agile, Soft, and Adaptable Robot Platform (ASAP) for Humanitarian Assistance and Disaster Relief: Actuator and Leg Design”, Jeju, Korea 2017
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), Workshop on Biologically Inspired Based Strategies for Hybrid and Multi-modal Locomotion, “Gallop Control for Quadruped Robots: Application to the MIT Cheetah Robot,” Tokyo, Japan 2013

Invited Talks

- Massachusetts Institute of Technology, “Agile and Versatile Legged Locomotion of Quadrupedal Robots: Hardware and Algorithms,” Cambridge, MA 2023
- Northeastern University IER Seminar, “Agile and Versatile Legged Locomotion of Quadrupedal Robots: Hardware and Algorithms,” Boston, MA 2023
- Boston Dynamics AI Institute, “Agile and Versatile Legged Locomotion of Quadrupedal Robots: Hardware and Algorithms,” Cambridge, MA 2023
- Annual Conference of Computational Structural Engineering Institute of Korea, “Design and Control Legged Locomotion Robots,” Sokcho, Korea 2022
- National Rehabilitation Center, “Design and Control Legged Robots,” held virtually, Korea 2022
- MERRIC Webinar Series, “Design and Intelligent Control of Legged Robots Using Optimization,” held virtually, Korea 2022
- Early Career **Keynote**, Robotics: Science and Systems (RSS), “Model-based Design and Control of Dynamic Legged Robots,” held virtually, USA 2021
- Seoul National University, “Optimization-based Motion Planning and Model Predictive Control of Legged Robots,” held virtually, Korea 2021
- Seoul National University, “Introduction to Legged Robots: Intelligent Control of Quadrupedal Robots,” held virtually, Korea 2021
- Pusan National University, “Optimization-based Trajectory Planning and Intel-

- ligent Control of Multi-legged Robots,” Pusan, Korea 2021
- Embassy of Switzerland in the Republic of Korea, Swiss-Korean Science Club, “Robotics Inspired by Nature,” held virtually, Korea 2021
- **Keynote**, Fall Annual Conference of Korean Society for Noise and Vibration Engineering, “Optimization-based Intelligent Control of Legged Robots,” Jeju, Korea 2020
- **Invited Talk**, Conference for the Development of Dronebot and AI for Combat, “Introduction to Defense Quadrupedal Robots,” Sejong, Korea 2020
- **Invited Talk**, Korea Robotics Society Annual Conference (KRoC), “Optimization-based Actuator, Trajectory Planning, and Model Predictive Control of Dynamic Legged Robots,” Pyeongchang, Korea 2020
- Young Researcher **Invited Talk**, Korean Society of Precision Engineering (KSPE) Autumn Conference “Optimization-based Trajectory Planning and Feedback Design of Dynamic Legged Locomotion Robots, Changwon, Korea 2019
- Young Researcher **Invited Talk**, Korean Society of Mechanical Engineers Dynamics and Control, “Optimization-based Trajectory Planning and Control of Legged Robots, Busan, Korea 2019
- Seoul National University ASRI Robotics Festival, “Optimization-based Actuator and Control Design of Dynamic Legged Robots,” Seoul, Korea 2019
- Daegu Gyeongbuk Institute of Science and Technology (DGIST), “Walking, Running, and Jumping of Legged Robots,” Daegu, Korea 2019
- Coordinated Science Lab (CSL) Seminar Series, “Dynamic Walking, Running, and Jumping Robots,” Urbana, IL 2016
- Korea University, “MIT Cheetah 2, A Fast Runner and Jumper,” Seoul, Korea 2015
- Yonsei University, “Inspiration from Biology: Control Design for Highspeed Running Legged Locomotion Robot,” Seoul, Korea 2015
- NAVER LABS, “Control Design for Bio-inspired Legged Locomotion Robot,” Sungnam, Korea 2015
- University of Waterloo, “Control Design for Dynamic Legged Locomotion Robots,” Waterloo, Ontario, Canada 2015
- University of Illinois at Urbana-Champaign, “Feedback Control Design for Dynamic Walking and Running on Legged Robots,” Urbana, IL 2015
- Chung-Ang University, “Highly Dynamic Legged Locomotion Robot for Walking and Running,” Seoul, Korea 2015
- Sungkyunkwan University, “Control Design for Dynamic Locomotion of Legged Robots,” Suwon, Korea 2015
- Korea Institute of Science and Technology (KIST) “Control Design for Dynamic Locomotion of Legged Robots,” Seoul, Korea 2015
- Korea University, “Control Design for Agile and Robust Locomotion,” Seoul, Korea 2015
- Field Robotics Research Center, Korea Advanced Institute of Science and Technology (KAIST), “Achieving Dynamic Walking and Running on Legged Robots: a Feedback Control Design,” Daejeon, Korea 2015
- Department of Mechanical Engineering, Korea Advanced Institute of Science and Technology (KAIST), “MABEL and MIT Cheetah 2: Dynamic Walker and Runner,” Daejeon, Korea 2014
- Columbia University, “Bio-inspired Legged Robots for Robust and Highly Agile Locomotion,” New York, New York 2014
- Daegu Gyeongbuk Institute of Science and Technology (DGIST), “Robust Walking and High-speed Running of Bio-inspired Legged Robot,” Daegu, Korea 2013
- Sogang University, “Control and Real-time Software Design for Highly Dynamic Bio-inspired Locomotion Robot,” Seoul, Korea 2013
- Ulsan National Institute of Science and Technology (UNIST), “Bio-inspired Legged Locomotion Robot: Bipedal Walker MABEL and High-speed Runner MIT Cheetah,” Ulsan, Korea 2013
- Yonsei University, “Control and Design of Highly Dynamic Bio-inspired Locomotion Robot,” Seoul, Korea 2013

- Korea Institute of Science and Technology (KIST), “Control Design for Bipedal Robot Walking on Uneven Ground and High-Speed Running of Quadruped Robot,” Seoul, Korea 2013
- University of Michigan, Control Seminar Series, “Modeling, Feedback Control and Experimental Results for MABEL, a Planar Bipedal Robot,” Ann Arbor, MI 2010

Posters

- Hae-Won Park and Sangbae Kim, “Dynamic Quadruped Bounding Control with Duty Cycle Modulation Using Vertical Impulse Scaling,” Dynamic Walking Conference, Zurich, Switzerland. 2014
- Hae-Won Park and Sangbae Kim, “Impulse-Based Gait Design and Control for Variable Speed Galloping on MIT Cheetah Robot,” Dynamic Walking Conference, Pittsburgh, PA, USA. 2013
- Hae-Won Park and J. W. Grizzle, “Control of Bipedal Walking on Uneven Terrain,” The University of Michigan Engineering Graduate Student Symposium. 2010
- Hae-Won Park, Koushil Sreenath, Jonathan Hurst, and J. W. Grizzle, “System Identification and Modeling of MABEL, A Bipedal Robot With a Cable-Differential-Based Compliant Drivetrain,” Dynamic Walking Conference. 2010
- Koushil Sreenath, Hae-Won Park, Jonathan Hurst, and J. W. Grizzle, “Hybrid Zero Dynamics Based Control Design for Efficient Walking,” Dynamic Walking Conference. 2010
- Hae-Won Park, Koushil Sreenath, and J. W. Grizzle, “Parameter Identification of MABEL, a New Bipedal Robot with Differential-Based Compliant Drivetrain,” The University of Michigan Engineering Graduate Student Symposium. 2009
This poster won the second prize in the session.
- Koushil Sreenath, Hae-Won Park, and J. W. Grizzle, “Nonlinear Feedback Control of a Novel Robotic Bipedal Walker,” The University of Michigan Engineering Graduate Student Symposium. 2009

PROFESSIONAL ACTIVITIES

Member,

- IEEE, ASME, Korea Society of Mechanical Engineers, Korea Robotics Society

Journal Editorial Board,

- Associate Editor, International Journal of Robotics Research 2023-Current
- Technical Editor, IEEE/ASME Transactions on Mechatronics 2020-2023
- Associate Editor, Journal of Intelligent Service Robotics 2016-Current

Conference Editorial Board,

- Editor for Workshop, IEEE International Conference on Robotics and Automation (ICRA) 2024-2026
- Senior Editor, International Conference on Ubiquitous Robots 2023-Current
- Associate Editor, IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2019-Current
- Associate Editor, IEEE International Conference on Robotics and Automation (ICRA) 2016-2023
- Associate Editor, International Conference on Ubiquitous Robots 2018-2022
- Associate Editor, IEEE International Conference on Soft Robotics (RoboSoft) 2019

Committee Member for Publication

- Korea Society of Mechanical Engineers, Dynamics and Control

Grant Proposal Review Panel,

- Agency for Defense Development 2020
- (United States) Army Research Office (ARO) 2017
- (United States) NSF Robust Intelligence Program 2016

Organizing Committee for International Conference,

- Co-organizing Chair, International Conference on Robot Intelligence Technology and Applications (RiTA) 2022
- Program Chair, International Conference on Robot Intelligence Technology and Applications (RiTA) 2021
- Publicity Co-Chair, International Conference on Control, Automation and Systems (ICCAS) 2021
- Editor, The First IFAC Workshop on Robot Control (IFAC WROCO) 2019
- Publicity Chair, International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), 2015

Program Committee for International Conference,

- Robotics Science and Systems 2017

Organizing Committee for Domestic Conference,

- Co-Program Chair, Korea Robotics Society Annual Conference (KRoC) 2023
- Korea Robotics Society Annual Conference (KRoC) 2020-2022

Reviewer,

- Journals: Nature Machine Intelligence, Science Robotics, IEEE Transactions on Robotics, IEEE Transactions on Mechatronics, International Journal of Robotics Research, IEEE Control Systems Technology, IEEE Robotics and Automation Magazine, Journal of Field Robotics, Control Engineering Practice, Robotica, Bioinspiration & Biomimetics, Nonlinear Dynamics, ASME Journal of Mechanisms and Robotics, ASME Applied Mechanics Review, International Journal of Control, Automation and Systems
- Conferences: IEEE International Conference on Robotics and Automation, IEEE International Conference on Intelligent Robots and Systems, IEEE Humanoids, IEEE American Control Conference, IEEE Conference on Decision and Control

PUBLICITY

- KAIST MARVEL Climbing Robot, National news: MBN News 7 (Dec. 26, 2022), YTN News (Dec. 26, 2022), JTBC Newsroom (Dec. 26, 2022)
- KAIST MARVEL Climbing Robot, Local news: TJB News (Dec. 26, 2022), Daejeon MBC News (Dec. 30, 2022), Daejeon KBS News (Dec. 30, 2022)
- CNET: Watch a Robot With Magnetic Feet and Spider-Man Powers Defy Gravity. (Jan. 3, 2023)
- Popular Science: The newest robot dog can scale walls and ceilings. (Dec. 19, 2022)
- IEEE Spectrum: Do not underestimate the pleasure of hearing little metal feet climbing up metal walls. (Dec. 16, 2022)
- MIT Cheetah 2 Boston Museum of Science Exhibition, 2016
- TIME: New Robot Cheetah Can Run (And Jump) Without a Tether (Sep. 30, 2014)
- Washington Post: New algorithm could help ‘cheetah’ robot outrun humans soon. (Sep. 15, 2014)
- IEEE Spectrum: MIT Cheetah Robot Bounds off Tether, Outdoors. (Sep. 15, 2014)
- MIT News: Bound for robotic glory – New algorithm enables MIT cheetah robot to run and jump, untethered, across grass. (Sep. 14, 2014)
- Chicago Field Museum Exhibition: MABEL on Exhibit (Jan. 2014)
- IEEE Spectrum: Video Tuesday: BigDog, MABEL, and Quadrotors (Sep. 20, 2011)
- CNN newsroom: Fast-moving bipedal robot with knees (Sep. 19, 2011)
- ESPN Road Trip (Sep. 14, 2011)
- The Discovery Channel Canada: Daily Planet (Mar. 28, 2011)
- Chicago Tribune: “U-M robot Mabel clears stacked wood, may jog soon” (Jun. 13, 2010)
- Engadget: “University of Michigan’s MABEL robot hits a stride, breaks a leg” (May. 25, 2010)

STUDENTS
ADVISING

KAIST, Department of Mechanical Engineering

Current Ph.D. Students

KangKyu Lee (currently on leave of absence)	Fall 2015-present
Seunghoon Shin	Fall 2019-present
Joon-Ha Kim	Fall 2019-present
Jonghun Choe	Spring 2020-present
Soonpyo Kwon	Spring 2020-present
Youngha Shin	Spring 2021-present
Mingyu Kim	Spring 2021-present
Yong Um	Spring 2021-present
Hajun Kim	Spring 2022-present
Kijeong Kim	Spring 2023-present
Sangyoung Woo,	Fall 2023-present

Current Master Students

Dongyun Kang	Spring 2022-present
Yonghun Lee	Spring 2022-present

Alumni

Seungwoo Hong, Ph.D. 2023 (currently at Postdoc at MIT)
Buyoun Cho, Ph.D. 2022 (currently at Rainbow Robotics)
Sung-woo Kim, Ph.D. 2022 (currently at Samsung Research)
Sara Fragomeli M.S. 2023
Yunmo Yang, M.S. 2022 (currently at Samsung Electronics)
Harim Son, M.S. 2022 (currently at NAVER Corp.)
Hajun Kim, M.S. 2022 (currently Ph.D. Student at my group)
Yeseong Jeong, M.S. 2022 (currently at Samsung Electronics)
Sangyoung Woo, M.S. 2022 (currently at Samsung Electronics)
Joowoong Byun, M.S. 2022 (currently Internship at Bain & Company Korea)
Donghoon Youm, M.S. 2022 (currently Ph.D. Student at RaiLab)
Uiuk Jeong, M.S. 2020 (currently at Rainbow Robotics)
Youngha Shin, M.S. 2021 (currently Ph.D. Student at my group)
Mingyu Kim, M.S. 2021 (currently Ph.D. Student at my group)
Lorenzo Amatucci, M.S. 2021 (currently Ph.D. Student at Istituto Italiano di Tecnologia, Italy)

UIUC, Department of Mechanical Science Engineering

Alumni

Yanran Ding, Ph.D. 2021 (currently Assistant Professor at the University of Michigan, Ann Arbor, MI)
Jaejun Park, Ph.D. 2022 (currently Hardware Engineer at Applied Materials, USA)
Chuanzheng Li, Ph.D. 2022 (currently Control Engineer at Xpeng Robotics, USA)
Won Dong Shin, M.S. 2018 (currently Ph.D. Student at EPFL)
Abhishek Pandala, M.S. 2019 (currently Ph.D. Student at Virginia Tech.)

Tyler Matijevich, M.S. 2019 (currently Technology Engineer at B&R Industrial Automation.)