Jeeseop Kim

CONTACT
INFORMATION

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Personal Website: jeeseop.com

310 Goodwin Hall, Virginia Tech
Blacksburg, VA 24061, USA

RESEARCH
INTERESTS

My primary academic interests span robotics, control theory, optimization, dynamical systems, and machine learning. My research goal is to establish a firm foundation that will extend the state-of-the-art methods for designing resilient and intelligent control algorithms for a wide range of collaborative work. This overview includes but is not limited to 1) autonomous robots and human assist systems for various applications, 2) collaborative multi-agent systems with decentralized and distributed control policies, 3) agile robots without compromising safety features.

My research has a clear blueprint from theoretical developments to experimental validations to achieve two specific objectives: 1) Creating algorithms to systematically design robust and intelligent controllers for high-dimensional and complex hybrid dynamical systems; and 2) Transferring the control framework into practice with a highly dynamic robot platform. These algorithms advance knowledge in the design of feedback controllers for dynamical models arising from various collaborative works that I target. The theoretical innovations also offer a unique opportunity to advance human-robot interaction, autonomous robot with safety features, robot locomotion.

ACADEMIC
HISTORY

Ph.D. Candidate in Mechanical Engineering
advisor: Prof. Kaveh Akbari Hamed
Virginia Polytechnic Institute and State University, USA

September 2017 -
Expected in 2022

M.S. in Transdisciplinary Studies (Program in Intelligent Systems)
advisor: Prof. Jaeheung Park
Seoul National University, South Korea

March, 2017

B.S. in Mechanical and Aerospace Engineering
Seoul National University, South Korea

March, 2014

PROFESSIONAL
EXPERIENCE

Graduate Research Assistant
Dept. of Mechanical Engineering, Virginia Tech, Blacksburg, USA
Advisor: Prof. Kaveh Akbari Hamed

Aug. 2019 - Present

Graduate Research Assistant
Dept. of Mechanical Engineering, Virginia Tech, Blacksburg, USA
Advisor: Prof. Tomonari Furukawa

Aug. 2017 - Jul. 2019

Graduate Research Assistant
Dept. of Transdisciplinary Studies, Seoul National University, South Korea
Advisor: Prof. Jaeheung Park

Jan. 2014 - Jul. 2017

Undergraduate Research Assistant
Dynamic Robotic Systems Lab, Seoul National University, South Korea
Supervisor: Prof. Jaeheung Park

Jun. 2013 - Sep. 2013

Undergraduate Research Assistant
Biorobotics Lab, Seoul National University, South Korea

Mar. 2012 - Feb. 2013

Supervisor: Prof. Kyu-Jin Cho

TEACHING
EXPERIENCE

Teaching Assistant
Dept. of Mechanical Engineering, Virginia Tech, Blacksburg, USA
ME5524: Bayesian Robotics
ME5984: Advanced Experimental Robotics

Teaching Assistant
Dept. of Transdisciplinary Studies, Seoul National University, South Korea
493.601: Convergent Robotics Technology
493.611: Dynamics and Control of Robot-Environment Interaction

PEER-REVIEWED
JOURNAL
ARTICLES

Under review

[*J5*] V. R. Kamidi, **J. Kim**, R. T. Fawcett, A. Ames and K. Akbari Hamed, Distributed Quadratic Programming-Based Nonlinear Controllers for Periodic Gaits on Legged Robots, IEEE Control Systems Letters, Under Review, Feb 2022.

Published

[*J4*] **J. Kim**, and K. Akbari Hamed, Cooperative locomotion via supervisory predictive control and distributed nonlinear controllers, ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 144, Issue. 3, pp. 031005-1-031005-15, Mar, 2022.

[*J3*] R. T. Fawcett, A. Pandala, **J. Kim**, and K. Akbari Hamed, Real-time planning and nonlinear control for quadrupedal locomotion with articulated tails, ASME Journal of Dynamic Systems, Measurement, and Control, Vol. 143, Issue. 7, pp. 071004-1-071004-15, Jul, 2021.

[*J2*] K. A. Hamed, **J. Kim**, A. Pandala, Quadrupedal locomotion via event-based predictive control and QP-based virtual constraints, IEEE Robotics and Automation Letters, Vol. 5, Issue. 3, pp. 4463-4470, Jul, 2020.

[*J1*] **J. Kim**, Y. Omori, A. Sifat, and T. Furukawa, Adjustably designed torque controlled humanoid platform, International Journal of Mechanical and Production Engineering, Vol. 7, Issue. 2, pp. 52-57, May, 2019.

PEER-REVIEWED
CONFERENCE
ARTICLES

Published

[*C4*] **J. Kim**, Y. Omori, A. Sifat, and T. Furukawa, Adjustably designed torque controlled humanoid platform, International Conference on Control, Automation, Robotics and Vision Engineering, Washington DC, USA, 21-22 Nov, 2018.

[*C3*] **J. Kim**, M. Kim, and J. Park, Improvement of humanoid walking control by compensating actuator elasticity, International Conference on Humanoid Robots (ICHR), Cancun, Mexico, 15-17 Nov, 2016.

[*C2*] J. Jung, **J. Kim**, S. Kim, W. Kwon, S. Na, K. Kim, J. Lee, G. Suh, and J. Park, Application of robot manipulator for cardiopulmonary resuscitation, International Symposium on Experimental Robotics (ISER), Tokyo, Japan, 3-6 Oct, 2016.

[*C1*] **J. Kim**, M. Kim, and J. Park, Improvement of humanoid gait stability using reduction gear deformation model, The 31st Institute of Control, Robotics and Systems (ICROS), Seoul, Korea, 10-11 Mar, 2016.

PATENT

[*P2-2*] **Jeeseop Kim**, *et al*, Automatic cardiopulmonary resuscitation device and control method

therefor, 2021. No. US11071686B2 (US Patent)

[*P*2-1] **Jeeseop Kim**, *et al*, Automatic cardiopulmonary resuscitation device and control method therefor, 2020. No. 108697572B (CN Patent), No. 3409258B1 (EU Patent)

[*P*1] **Jeeseop Kim**, *et al*, Apparatus for automatic cardiovascular pulmonary resuscitation, 2016. Korea Patent No.10-2016-0172286.

HONORS

Awards

The Best Presentation Award, Institute of Control, Robotics and Systems 2016	2016
Darpa Robotics Challenge DRC Finalist	2015
The Best Presentation Award from Bachelor Thesis Presentation, Seoul National University	2012

Graduate Fellowship

Research Assistant Scholarships, Virginia Tech, Blacksburg, USA	Jul. 2017 - present
Gwan-ak Scholarship, Seoul National University, Seoul, South Korea	Mar. 2014 - Feb. 2015

Undergraduate Fellowship

National Scholarship from Korea Student Aid Foundation, South Korea	Mar. 2009 - Feb. 2010

ACADEMIC SERVICES

Reviewer

IEEE American Control Conference (ACC)	2022
IEEE International Conference on Robotics and Automation (ICRA)	2020 - 2022
IEEE Conference on Decision and Control (CDC)	2020, 2021
IEEE International Conference on Intelligent Robots and Systems (IROS)	2021

PROFESSIONAL SKILLS

- ○ Robotics
- ○ Autonomous Robots
- ○ Robot Locomotion
- ○ Cooperative Robotics
- △ Control Theory
- △ Nonlinear Control
- △ Distributed Control
- □ Hybrid Dynamical Systems
- □ Multiagent Systems
- □ Optimization

TECHNICAL SKILLS

Operating Systems: Ubuntu(Linux), ROS
Programming Language: C/C++, Python, MATLAB
Design and Simulation Software: Solidworks, Unigraphics(NX)

References available upon request

last Updated: March 10, 2022