

Jeongseok Lee

Seattle, WA
jslee02@gmail.com

Robotics Software Engineer

GitHub: jslee02 / jeongseok-meta
LinkedIn: jeongseok-lee
GoogleScholar: DJ6mzSUA AAAJ

As a software engineer and robotics scientist, I am passionate about applying physics-based simulation to robotics and AR/VR applications. My expertise includes multibody dynamics simulation, motion planning, and machine learning, which I have developed through my work experience in both fields.

My primary focus is creating software bridging the gap between theoretical concepts and real-world applications on real-time platforms, such as robots and AR/VR devices. I am currently leading the development and maintenance of [DART](#), an open-source physics simulation library that can be utilized in robotics and AR/VR contexts.

My dedication to advancing robotics and software engineering is reflected in my active involvement in research and development projects, where I apply these technologies to solve real-world problems. As a problem-solver with a strong background in software development, I enjoy tackling new challenges and opportunities in robotics and AR/VR domains.

I am excited to contribute to advancing robotics and AR/VR applications through innovative solutions and novel approaches.

TECHNICAL EXPERIENCE

Staff Research Engineer | Staff Software Engineer

Reality Labs Research | Meta Robotics Studio, Meta Platforms, Inc

Apr 2022 – Present

Redmond, WA

- Developed physics-based simulation for avatars in AR/VR applications to enhance immersion and realism in virtual experiences
- Building a full-stack simulation framework for humanoid robots, encompassing physics engines, rendering, sensor simulation, and sim-to-real transfer to enable intelligent robots to perform complex real-world tasks

Robotics Software Engineer | Applied Scientist

Robotics AI | Amazon Robotics, Amazon.com, Inc

Feb 2019 – Apr 2022

Seattle, WA

- Developed scalable simulation infrastructure for robotic workcells
- Developed physics-based simulation for articulated robot systems

Software Engineering Intern

X (formerly Google [X])

Jun 2018 – Sep 2018

Mountain View, CA

- Developed efficient robot simulation software for parallel mechanism systems functioning in contact-rich environments

Visiting Scientist

Personal Robotics Lab, Computer Science & Engineering, University of Washington

Jun 2017 – Aug 2017

Seattle, WA

- Supervised by Siddhartha S. Srinivasa
- Worked on robotic manipulation and personal robotics, including modeling complex dynamical systems, motion planning, and system integration

Senior Software Engineer

Personal Robotics Lab, The Robotics Institute, Carnegie Mellon University

Jan 2016 – Jun 2017

Pittsburgh, PA

- Supervised by Siddhartha S. Srinivasa
- Developed and managed [AIKIDO](#), a motion planning and decision-making library for robotic manipulation, where I focused on the inverse kinematics, collision detection, and robot dynamics components. The framework was deployed to various robot platforms developed by the Personal Robotics Lab such as [HERB](#) and [ADA](#).
- Worked on scalable and energy conservative integration methods for complex multi-body systems

Research Scientist

Graphics Lab, College of Computing, Georgia Institute of Technology

Mar 2013 – Jan 2016

Atlanta, GA

- Supervised by C. Karen Liu
- Developed robot simulation library, [DART](#), that includes kinematics, dynamics, collision detection, and optimization; and integrated DART into [Gazebo](#), the official robot simulation platform for [DARPA Robotics Challenge](#).
- Developed optimization based motion planning algorithms for nonholonomic robotic systems

EDUCATION

M.S. in Computer Science & Engineering

University of Washington

Advised by Siddhartha S. Srinivasa

Sep 2017 – Dec 2018

Ph.D. candidate (ABD) in Mechanical and Aerospace Engineering

Seoul National University

Advised by Frank C. Park

Mar 2007 – Feb 2013

B.S. in Naval Architecture and Ocean Engineering

Seoul National University

Advised by Kyu-Yeul Lee

Mar 2002 – Aug 2006

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PUBLICATIONS

Journal

- **Jeongseok Lee**, Michael X. Grey, Sehoon Ha, Tobias Kunz, Sumit Jain, Yuting Ye, Siddhartha S. Srinivasa, Mike Stilman, C. Karen Liu, "DART: Dynamic Animation and Robotics Toolkit," The Journal of Open Source Software, vol. 3, no. 22, p. 500, Feb. 2018.

Conference Proceedings

- A. Ferguson et al. (incl. **Jeongseok Lee**), "MHR: Momentum Human Rig," 2025. [arXiv]
- Keenon Werling, Dalton Omens, **Jeongseok Lee**, Ioannis Exarchos, C Karen Liu, "Fast and Feature-Complete Differentiable Physics for Articulated Rigid Bodies with Contact," in Robotics: Science and Systems (RSS), 2021.
- Gilwoo Lee, Brian Hou, Aditya Mandalika, **Jeongseok Lee**, Siddhartha S. Srinivasa, "Bayesian Policy Optimization for Model Uncertainty," in International Conference on Learning Representations (ICLR), 2019.
- **Jeongseok Lee**, Daqing Yi, and Siddhartha S. Srinivasa, "Sampling of Pareto-Optimal Trajectories using Progressive Objective Evaluation in Multi-Objective Motion Planning," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2018.
- **Jeongseok Lee**, C. Karen Liu, Frank C. Park, and Siddhartha S. Srinivasa, "A Linear-Time Variational Integrator for Multibody Systems," in The 12th International Workshop on the Algorithmic Foundations of Robotics (WAFR), San Francisco, CA, 2016.
- Jeffrey T. Bingham, **Jeongseok Lee**, Ravi N. Haksar, Jun Ueda, and C. Karen Liu, "Orienting in Mid-air through Configuration Changes to Achieve a Rolling Landing for Reducing Impact after a Fall," in IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), 2014
- **Jeongseok Lee**, Jisoo Hong, and Frank C. Park, "A Discrete Mechanics-Based Recursive Algorithm for Rigid Multibody Systems," Japan-Korea Joint Symposium on Dynamics & Control, Fukuoka, Japan, 2013.
- **Jeongseok Lee** and Frank C. Park, "Optimal Landing Motions for Legged Robots with Variable Stiffness Joints," in Proc. International Conference on Advanced Mechatronics (ICAM), Osaka, Japan, 2010.
- **Jeongseok Lee** and Frank C. Park, "srLib: The Next Standard in Robotics Physics Engines," in Proc. International Conference on Ubiquitous Robots and Ambient Intelligence (URAI), Kwangju, Korea, 2009. (Outstanding video paper award)

PATENTS

- "Robotic workcell for interacting with goods to person systems," A. Stubbs, A. J. Parness, S. B. Karumanchi, J. R. Hooks, P. Owan, R. B. Warrior, A. C. C. Lopez, **J. Lee**, C. Salisbury, US Patent 12,013,686.
- "Robotic picking assemblies configured to grasp multiple items," **J. Lee**, A. J. Parness, A. Stubbs, US Patent 11,478,942.

HONOR & AWARD

- Grand Prize, OSS World Challenge 2016, The Ministry of Science, ICT and Future Planning of Korea (with DART)

EDITORIAL ACTIVITIES

Peer Review Activities

- Journal of Mechanisms and Robotics: 2012
- IEEE Robotics and Automation Letters (RA-L): 2018
- IEEE International Conference on Robotics and Automation (ICRA): 2015, 2017-2018
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS): 2017-2018
- The Journal of Open Source Software: 2017

INVITED TALKS

- Amazon, Amazon Machine Learning Conference, Apr 2018.

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OPEN SOURCE DEVELOPMENT EXPERIENCE

- Nov 2012–present **Lead developer** of DART
Rigid and Soft body dynamics library
• Website: <https://dart.readthedocs.io/en/latest/>
• Award: The *Grand Prize* of Open Source Software World Challenge 2016
- 2016–2018 **Contributor** to AIKIDO
Motion planning and decision making library
• Code repository: <https://github.com/personalrobotics/aikido>
- 2015–2017 **Contributor** to FCL
Collision detection library
• Code repository: <https://github.com/flexible-collision-library/fcl>
- 2012–2016 **Contributor** to Gazebo
GUI-based robot simulator powered by ODE, Bullet, Simbody, and DART
• Website: <http://www.gazebosim.org/>
- 2007–2013 **Major contributor** to srLib
Rigid body dynamics library
• Website: <http://robotics.snu.ac.kr/srlib>
- 2007–2011 **Major contributor** to R-Station
GUI-based robot simulator powered by srLib
• Website: <http://robotics.snu.ac.kr/r-station>

SOFTWARE SKILLS

- Computer languages: Modern C/C++ (preferred), Python
- Platforms: Ubuntu (Linux), macOS, Windows
- Physics engine experiences: DART (lead developer), Bullet, ODE, PhysX
- Build systems: CMake (preferred), Buck, SCons, Bazel