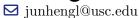
Junheng Li



in Linkedin

Website

8 Google Scholar

Education

2022-present \diamond **Ph.D., University of Southern California** in Mechanical Engineering.

Advisor: Prof. Quan Nguyen

Thesis: Hierarchical-optimization-based Control for Dynamic Humanoid Loco-manipulation

2020-2021 \diamond M.S., University of Southern California in Mechanical Engineering.

Employment History

California.

Aug 2023-present

♦ **Teaching Assistant,** Aerospace and Mechanical Engineering, University of Southern California.

• AME 451: Linear Control Systems I (Fall 2023, Spring 2024, and Spring 2025)

• AME 556: Robot Dynamics and Control (Fall 2024 - Invited Project Advisor)

Research Publications

Preprint

- Z. Gu, J. Li, W. Shen, et al., Humanoid locomotion and manipulation: Current progress and challenges in control, planning, and learning, 2025.
- L. Krishna, S. Cheng, J. Li, Q. Chen, N. Hovakimyan, and Q. Nguyen, Diffcotune: Differentiable co-tuning for enhanced cross-domain robot control, 2025.
- J. Li, Z. Duan, J. Ma, and Q. Nguyen, Gait-net-augmented implicit kino-dynamic mpc for dynamic variable-frequency humanoid locomotion over discrete terrains, 2025.
- Q. Chen, J. Li, S. Cheng, N. Hovakimyan, and Q. Nguyen, Autotuning bipedal locomotion mpc with grfm-net for efficient sim-to-real transfer, 2024.
- J. Li, O. Kolt, and Q. Nguyen, Continous dynamic bipedal jumping via adaptive-model optimization, 2024.
- J. Li, J. Ma, O. Kolt, M. Shah, and Q. Nguyen, Dynamic loco-manipulation on hector: Humanoid for enhanced control and open-source research, 2023.

Journal Articles

J. Li and Q. Nguyen, "Dynamic walking of bipedal robots on uneven stepping stones via adaptive-frequency mpc," *IEEE Control Systems Letters*, vol. 7, pp. 1279–1284, 2023.

Conference Proceedings

A.-C. He, J. Li, J. Park, et al., "A novel telelocomotion framework with com estimation for scalable locomotion on humanoid robots," in 2025 IEEE International Conference on Robotics and Automation (ICRA), 2025, accepted and to appear.

- J. Li, Z. Le, J. Ma, and Q. Nguyen, "Adapting gait frequency for posture-regulating humanoid push-recovery via hierarchical model predictive control," in 2025 IEEE International Conference on Robotics and Automation (ICRA), 2025, accepted and to appear.
- J. Li and Q. Nguyen, "Kinodynamic pose optimization for humanoid loco-manipulation," in 2023 IEEE-RAS 22nd International Conference on Humanoid Robots (Humanoids), 2023, pp. 1–8.
- J. Li and Q. Nguyen, "Multi-contact mpc for dynamic loco-manipulation on humanoid robots," in 2023 American Control Conference (ACC), 2023.
- J. Li, J. Ma, and Q. Nguyen, "Balancing control and pose optimization for wheel-legged robots navigating high obstacles," in 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS), IEEE, 2022, pp. 8835–8841.
- J. Li and Q. Nguyen, "Force-and-moment-based model predictive control for achieving highly dynamic locomotion on bipedal robots," in 2021 60th IEEE Conference on Decision and Control (CDC), IEEE, 2021, pp. 1024–1030.

Services

2025	\Diamond	Registration	Coordinator	of Robotics:	Science and S	Systems	Conference (1	RSS)
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⋄ Reviewer of International Journal of Robotics and Automation

⋄ Reviewer of Autonomous Robots (AURO)

Reviewer of IEEE International Conference on Intelligent Robots and Systems (IROS)

Invited Talks, Presentations, and Demonstrations

Invited talk, USC Robotics Seminar

- - Demonstration, IEEE International Conference on Robotics and Automation (ICRA)
- 2023/11 ♦ "Toward Dynamic Locomotion and Loco-manipulation on Humanoid Robots via Model Predictive Control with Linear Dynamics Models"

 Invited talk, LMU Department of Mechanical Engineering
- 2023/10 ♦ "Toward Dynamic Locomotion and Loco-manipulation on Humanoid Robots via Model Predictive Control with Linear Dynamics Models"

 Invited talk, 42nd Southern California Control Workshop
 - "Demonstration of Dynamic Locomotion on Bipedal Robots via Force-and-moment-based Model Predictive Control"
 Demonstration, IEEE International Conference on Intelligent Robots and Systems (IROS)

- - ♦ "Dynamic Walking of Bipedal Robots on Uneven Stepping Stones via Adaptive-frequency MPC" Oral Presentation, American Control Conference (ACC)

Mentoring

Graduate Students:

- - Ziwei Duan, M.S. in Computer Science, USC
 Project: Gait-frequency Net: A Data-driven Approach to Enhance Bipedal Locomotion Control
- - Omar Kolt, M.S. in Mechanical Engineering, USC.
 Project: Control and Software Infrastructure of HECTOR Humanoid
 Now: Software Engineer at Tesla, Optimus Team
 - Omar Berra, M.S. in Mechanical Engineering, USC
 Project: Design and Whole-body Control of Bipedal Wheel-legged Robot
 Now: Testing Engineer at the Boring Company
- - ♦ Tiansheng Wu, M.S. in Mechanical Engineering, USC Project: Terrain-aware Trajectory Optimization and Control on Bipedal Robots

Undergraduate Students:

- - Nathan Chun, B.S. in Mechanical Engineering, USC
 Project: Optimal Control of High-degree-of-freedom Mechanical Systems
 - ♦ Bill Ouyang, B.S. in Mechanical Engineering, USC

High School Students:

Summer 2024

- Chinmay Ramamurthy, Ethan Le, Ian Chen, Perceiver Summer Research Project: Modeling and Control of Series Elastic Actuators for Knee Exoskeletons
- ♦ Jonathan Li, Ted Han, Sophia Fu, Perceiver Summer Research Project: Package Transferring with UAV and Passive Manipulation Mechanism

Summer 2022

Dylan Dharwadkar, USC SHINE Program
 Project: Swing Trajectory Design and Control in Bipedal Robot Walking