Quan T. Nguyen

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Google Scholar

Education

Carnegie Mellon University — Pittsburgh, PA
Ph.D. in Mechanical Engineering — 2014-2017

- Thesis: "Robust and Adaptive Dynamic Walking of Bipedal Robots" (**Best Dissertation Award**)
- Advisor: Koushil Sreenath

Hanoi University of Science and Technology — Hanoi, Vietnam
B.S. in Electrical Engineering, — 2007-2012

- *Talented Engineer's Program*, Major: Automatic Control

Professional Experience

University of Southern California — Los Angeles, CA
Assistant Professor, Aerospace and Mechanical Engineering — Aug 2019 - Now

Massachusetts Institute of Technology — Cambridge, MA
Postdoctoral Associate, Biomimetic Robotics Lab — Jan 2018 - Jun 2019
Advisor: Sangbae Kim

Awards

- **Charles lee Powell Foundation's Faculty Research Award** 2020
- **Best Doctoral Dissertation Award**, Carnegie Mellon University. 2017
- **Best Systems Paper Award Finalist**, Robotics: Science and Systems (RSS). 2017
- **Best Presentation of the Session**, American Control Conference. 2016
- **Travel Award**, American Control Conference. 2015
- **GSA/Provost Conference Funding**, Carnegie Mellon University. 2015
- **The Vietnam Education Foundation (VEF) Fellowship award**. 2013
- **Kumho Asiana Scholarship**, Kumho Asiana Group, Korea. 2008
- **Odon Vallet Scholarship**, France. 2007
- **Third prize at Vietnam National Physics Contest**. 2016-2017

Media

- **MIT Cheetah 3 robot leaping on a 30-inch desk - the highest obstacle jumping experiment for a quadruped robot**: CNN, NBC, CBC, ABC, etc. 2018
- **ATRIAS robot walking on stepping stones - the first ever successful experiment of bipedal robots walking dynamically over stepping stones**: IEEE Spectrum, TechCrunch, TechXplore, Digital Trends, etc. 2017

Teaching

- **University of Southern California** — Los Angeles, CA
  - [AME 599] Robot Dynamics and Control — Spring 2021
  - [AME 547] Foundations of Manufacturing Automation — Fall 2020
  - [AME 201] Statics — Fall 2019
- **Carnegie Mellon University** — Pittsburgh, PA
  - [ME 24-452] Mechanical Systems Experimentation (105 students), (Teaching Assistant) — Spring 2017
  - [ECE 18-771 / ME 24-771] Linear Systems (Guest Lecturer) — Fall 2016

Publications

[1] M. Sombolestan, Y. Chen, and **Q. Nguyen**, "Adaptive force-based control for legged robots.", in *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2021, to appear.

[2] Y. Chen, A. Pandey, Z. Deng, A. Nguyen, R. Wang, T. Liu, P. Thonapalin, **Q. Nguyen**, and S. K. Gupta, "A semi-autonomous quadruped robot for performing disinfection in cluttered environments.", in *45th ASME Mechanisms and Robotics Conference (MR)*, 2021.

[3] M. Hermes, T. McLaughlin, M. Luhar, and **Q. Nguyen**, "Locomotion and control of a friction-driven tripedal robot.", in *International Conference on Robotics and Automation (ICRA)*, 2021.

[4] **Q. Nguyen**, X. Da, J. Grizzle, and K. Sreenath, "Dynamic walking on stepping stones with gait library and control barrier functions", in *Algorithmic Foundations of Robotics XII*, Springer, Cham, 2020, pp. 384–399.

[5] **Q. Nguyen** and K. Sreenath, "Optimal robust safety-critical control for dynamic robotics", *arXiv preprint arXiv:2005.07284, Transaction on Automatic Control (conditional accepted)*, 2020.

[6] **Q. Nguyen**, M. J. Powell, B. Katz, J. Di Carlo, and S. Kim, "Optimized jumping on the mit cheetah 3 robot", in *2019 International Conference on Robotics and Automation (ICRA)*, IEEE, 2019, pp. 7448–7454.

[7] T. D. Son and **Q. Nguyen**, "Safety-critical control for non-affine nonlinear systems with application on autonomous vehicle", in *2019 IEEE 58th Conference on Decision and Control (CDC)*, IEEE, 2019, pp. 7623–7628.

[8] **Q. Nguyen**, A. Agrawal, W. Martin, H. Geyer, and K. Sreenath, "Dynamic bipedal locomotion over stochastic discrete terrain", *The International Journal of Robotics Research*, vol. 37, no. 13-14, pp. 1537–1553, 2018.

[9] **Q. Nguyen**, A. Agrawal, X. Da, W. C. Martin, H. Geyer, J. W. Grizzle, and K. Sreenath, "Dynamic walking on randomly-varying discrete terrain with one-step preview.", in *Robotics: Science and Systems*, vol. 2, 2017.

[10] A. Siravuru, A. Wang, **Q. Nguyen**, and K. Sreenath, "Deep visual perception for dynamic walking on discrete terrain", in *2017 IEEE-RAS 17th International Conference on Humanoid Robotics (Humanoids)*, IEEE, 2017, pp. 418–424.

[11] **Q. Nguyen**, X. Da, J. Grizzle, and K. Sreenath, "Dynamic walking on stepping stones with gait library and control barrier", in *Workshop on Algorithimic Foundations of Robotics*, 2016.

[12] **Q. Nguyen**, A. Hereid, J. W. Grizzle, A. D. Ames, and K. Sreenath, "3d dynamic walking on stepping stones with control barrier functions", in *2016 IEEE 55th Conference on Decision and Control (CDC)*, IEEE, 2016, pp. 827–834.

[13] **Q. Nguyen** and K. Sreenath, "Exponential control barrier functions for enforcing high relative-degree safety-critical constraints", in *2016 American Control Conference (ACC)*, IEEE, 2016, pp. 322–328.

[14] **Q. Nguyen** and K. Sreenath, "Optimal robust control for constrained nonlinear hybrid systems with application to bipedal locomotion", in *2016 American Control Conference (ACC)*, IEEE, 2016, pp. 4807–4813.

[15] **Q. Nguyen** and K. Sreenath, "Optimal robust time-varying safety-critical control with application to dynamic walking on moving stepping stones", in *Dynamic Systems and Control Conference*, American Society of Mechanical Engineers, vol. 50701, 2016, V002T28A005.

[16] **Q. Nguyen** and K. Sreenath, "L 1 adaptive control for bipedal robots with control lyapunov function based quadratic programs", in *2015 American Control Conference (ACC)*, IEEE, 2015, pp. 862–867.

[17] **Q. Nguyen** and K. Sreenath, "Optimal robust control for bipedal robots through control lyapunov function based quadratic programs.", in *Robotics: Science and Systems*, 2015.

[18] **Q. Nguyen** and K. Sreenath, "Safety-critical control for dynamical bipedal walking with precise footstep placement", *IFAC-PapersOnLine*, vol. 48, no. 27, pp. 147–154, 2015.

[19] **Q. Nguyen** and P. Nguyen, "Robust and adaptive control of euler-lagrange systems with an attractor independent of uncertainties", in *2012 12th International Conference on Control, Automation and Systems*, IEEE, 2012, pp. 1309–1312.

Professional Activities

Editor Board

- Frontiers in Robotics and AI 2020

Conference Service

- Frontiers in Robotics and AI 2020
- Program Committee, Robotics: Science and Systems (RSS) 2017-2020
- Co-Chair for regular session on Uncertain Systems and Robustness at the Dynamic Systems and Control Conference 2016.

Journal and Conference Reviewer

- International Journal of Robotics Research (IJRR) 2018-2020.
- IEEE Transactions on Automatic Control (TAC) 2018-2020.
- IEEE Robotics and Automation Letters (RA-L) 2020.
- Robotica 2020.
- International Journal of Autonomous Robots 2020.
- Robotics: Science and Systems Conference (RSS) 2017-2020.
- IEEE International Conference on Robotics and Automation (ICRA) 2015-2020.
- IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) 2017-2020.
- IEEE Access Journal 2016.
- IEEE Conference on Decision and Control (CDC) 2016-2020.
- American Control Conference (ACC) 2015-2020.
- IEEE-RAS International Conference on Humanoid Robots 2016-2017.
- International Conference on Ubiquitous Robots 2020.
- Indian Control Conference 2016-2017.

Grant Reviewer

- Dutch Research Council: Applied and Engineering Sciences 2020

Current and Recent Collaborators

- Satyandra K. Gupta, USC
- Rahul Jain, USC
- Mitul Luhar, USC
- Sangbae Kim, MIT
- Koushil Sreenath, UC Berkeley
- Aaron Ames, Caltech
- Jessy Grizzle, University of Michigan
- Hartmut Geyer, Carnegie Mellon University
- Ayonga Hereid, Ohio State University