CURRICULUM VITAE

Junhyeok Ahn

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EDUCATION

Aug. 2016 – Jul. 2022	**The University of Texas at Austin**, *Austin, TX* Doctor of Philosophy in Mechanical Engineering Advisor: Luis Sentis
Mar. 2010 – Feb. 2016	**Hanyang University**, *Seoul*, *Korea* Bachelor of Science in Mechanical Engineering

WORK AND RESEARCH EXPERIENCE

Aug. 2022 – Present	**Senior Software Engineer** Boston Dynamics, *Waltham, MA*
Aug. 2017 – Jul. 2022	**Graduate Research Assistant** The University of Texas at Austin, *Austin, TX* • Planning, control, optimization, and machine learning algorithms for legged robots
Jun. 2017 – Aug. 2017	**Research Intern** Apptronik Inc., *Austin, TX* • Low-level actuator controller and a high-level whole-body control for humanoids.

PUBLICATIONS

1. **J. Ahn**, S. H. Bang, C. Gonzalez, Y. Yuan, and L. Sentis, "Data-Driven Safety Verification and Explainability for Whole-Body Manipulation and Locomotion", in *2022 IEEE-RAS 21st International Conference on Humanoid Robots (Humanoids)*, 2022
2. **J. Ahn**, S. J. Jorgensen, S. H. Bang, and L. Sentis, "Versatile locomotion planning and control for humanoid robots," *Frontiers in Robotics and AI*, vol. 8, 2021.
3. **J. Ahn** and L. Sentis, "Nested mixture of experts: Cooperative and competitive learning of hybrid dynamical system," in *Proceedings of the 3rd Conference on Learning for Dynamics and Control*, vol. 144. PMLR, 07 – 08 June 2021, pp. 779–790.
4. J. Lee, **J. Ahn**, E. Bakolas, and L. Sentis, "Reachability-based trajectory optimization for robotic systems given sequences of rigid contacts," in *2020 American Control Conference (ACC)*, 2020, pp. 2158–2165.
5. D. Kim, S. J. Jorgensen, J. Lee, **J. Ahn**, J. Luo, and L. Sentis, "Dynamic locomotion for passive-ankle biped robots and humanoids using whole-body locomotion control," *The International Journal of Robotics Research*, vol. 39, no. 8, pp. 936–956, 2020.
6. **J. Ahn**, J. Lee, and L. Sentis, "Data-efficient and safe learning for humanoid locomotion aided by a dynamic balancing model," *IEEE Robotics and Automation Letters*, vol. 5, no. 3, pp. 4376–4383, 2020.
7. **J. Ahn**, D. Kim, S. Bang, N. Paine, and L. Sentis, "Control of a high performance bipedal robot using viscoelastic liquid cooled actuators," in *2019 IEEE-RAS 19th International Conference on Humanoid Robots (Humanoids)*, 2019, pp. 146–153.
8. D. Kim, J. Lee, **J. Ahn**, O. Campbell, H. Hwang, and L. Sentis, "Computationally-robust and efficient prioritized whole-body controller with contact constraints," in *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018, pp. 1–8.
9. **J. Ahn**, O. Campbell, D. Kim, and L. Sentis, "Fast kinodynamic bipedal locomotion planning with moving obstacles," in *2018 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, 2018, pp. 177–184.

10. D. Kim, **J. Ahn**, O. Campbell, N. Paine, and L. Sentis, “Investigations of a robotic test bed with viscoelastic liquid cooled actuators,” *IEEE/ASME Transactions on Mechatronics*, vol. 23, no. 6, pp. 2704–2714, 2018. (**Best Paper Award**)
11. D. Kim, O. Campbell, **J. Ahn**, L. Sentis, and N. Paine, “Investigations of viscoelastic liquid cooled actuators applied for dynamic motion control of legged systems,” in *2017 IEEE-RAS 17th International Conference on Humanoid Robotics (Humanoids)*, 2017, pp. 710–717.

PREPRINTS

1. S. J. Jorgensen, O. Campbell, T. Llado, D. Kim, **J. Ahn**, and L. Sentis, “Exploring model predictive control to generate optimal control policies for hri dynamical systems,” 2017.

TEACHING EXPERIENCE

Jan. 2021 – May. 2021	**Graduate Teaching Assistant** The University of Texas at Austin, Aerospace Engineering & Engineering Mechanics, *Austin, TX* • Decision and Control of Human-Centered Robots (ASE389)
Jan. 2017 – May. 2017	**Graduate Teaching Assistant** The University of Texas at Austin, McCombs School of Business, *Austin, TX* • Data Mining (MIS373)

SKILLS

Program Language	Python, C++, Matlab
Library	Dart, Pybullet, Mujoco, Tensorflow, ZeroMQ

SOFTWARES

PnC	C++ library designed for generating trajectories for a robot system and stabilizing the system over the trajectories. (https://github.com/junhyeokahn/PnC)
PyPnC	Python implementation of PnC. (https://github.com/junhyeokahn/PyPnC)
tf_rbdl	Tensorflow-based rigid body dynamics algorithms. (https://github.com/junhyeokahn/tf_rbdl)