Dongho Kang

Elias-Canetti-Strasse 2, 8050 Zürich, Switzerland
dkang@rai-inst.com • https://donghokang.net/

RESEARCH INTERESTS

The goal of my research is to broaden the skill set of legged robots and enhance their ability to generate agile and expressive behaviors by integrating advanced control strategies with data-driven character animation techniques.

PROFESSIONAL AFFILIATIONS & ACTIVITIES

RAI Institute, Zurich, Switzerland

- Research Scientist — Jun 2025 – Present

NVIDIA, Zurich, Switzerland

- Deep Learning Intern — Jun 2018 – Dec 2018
  - Projects: Super-resolution and anti-aliasing algorithms for DLSS.

CNP Technology Inc., Seoul, South Korea

- CAD Engineer (alternative military service) — Dec 2011 – Mar 2014

EDUCATION

ETH Zürich, Zurich, Switzerland

- Doctor of Science in Computer Science — Aug 2025
  - Main advisor: Prof. Dr. Stelian Coros
  - Second advisor: Prof. Dr. Marco Hutter
  - Thesis: Animal Motion Imitation for Adaptive and Lifelike Locomotion Control of Legged Robots
- Master of Science in Mechanical Engineering — Aug 2019
  - Graduated with distiction
  - Advisor: Prof. Dr. Marco Hutter
  - Thesis: End-to-End Collision Avoidance from Depth Input with Memory-based Deep RL

Seoul National University, Seoul, South Korea

- Bachelor of Science in Mechanical Engineering & Computer Science (double major) — Aug 2016
  - Advisor: Prof. Dr. Dongjun Lee
  - Graduated with honor (Cum Laude)

PUBLICATIONS

JOURNALS

[1] Dongho Kang, Jin Cheng, Fatemeh Zargarbashi, Taerim Yoon, Sungjoon Choi, and Stelian Coros, "Learning Steerable Imitation Controllers from Unstructured Animal Motions," in *IEEE Robotics and Automation Letters (RA-L)*, 2025 (under review.)

[2] Lukas Molnar, Jin Cheng, Gabriele Fadini, Dongho Kang, Fatemeh Zargarbashi, and Stelian Coros, "Whole-body Inverse Dynamics MPC for Legged Loco-manipulation," in *IEEE Robotics and Automation Letters (RA-L)*, 2025 (under review.)

[3] Jin Cheng, Dongho Kang, Gabriele Fadini, Guanya Shi, and Stelian Coros, "RAMBO: RL-augmented Model-based Optimal Control for Whole-body Loco-manipulation," in *IEEE Robotics and Automation Letters (RA-L)*, Sep 2025.

[4] Taerim Yoon, Dongho Kang, Seungmin Kim, Jin Cheng, Minsung Ahn, Stelian Coros, and Sungjoon Choi, "Spatio-Temporal Motion Retargeting," in *IEEE Transactions on Robotics (T-RO)*, Aug 2025.

[5] Dongho Kang, Jin Cheng, Miguel Zamora, Fatemeh Zargarbashi, and Stelian Coros, "RL + Model-based Control: Using On-demand Optimal Control to Learn Versatile Legged Locomotion," in *IEEE Robotics and Automation Letters (RA-L)*, Oct 2023.

CONFERENCES

[1] Yarden As, Chengrui Qu, Benjamin Unger, Dongho Kang, Max van der Hart, Laixi Shi, Stelian Coros, Adam Wierman, Andreas Krause, "SPiDR: A Simple Approach for Zero-Shot Safety in Sim-to-Real Transfer," in *Neural Information Processing Systems (NeurIPS)*, 2025 (accepted).

[2] Fatemeh Zargarbashi, Jin Cheng, Dongho Kang, Robert Sumner, and Stelian Coros, "RobotKeyframing: Learning Locomotion with High-Level Objectives via Mixture of Dense and Sparse Rewards," in *Conference on Robot Learning (CoRL)*, Nov 2024.

[3] Adrian Hartmann, Dongho Kang, Fatemeh Zargarbashi, Miguel Angel Zamora Mora, and Stelian Coros, "Deep Compliant Control for Legged Robots," in *International Conference on Robotics and Automation (ICRA)*, May 2024.

[4] Daniel Widmer, Dongho Kang (equal contribution), Bhavya Sukhija, Jonas Hübotter, Andreas Krause, and Stelian Coros, "Tuning Legged Locomotion Controllers via Safe Bayesian Optimization," in *Conference on Robot Learning (CoRL)*, Nov 2023.

[5] Dongho Kang, Flavio De Vincenti, Naomi C. Adam, and Stelian Coros, "Animal Motions on Legged Robots Using Nonlinear Model Predictive Control," in *International Conference on Intelligent Robots and Systems (IROS)*, Oct 2022.

[6] Dongho Kang, Simon Zimmermann, and Stelian Coros, "Animal Gaits on Quadrupedal Robots using Motion Matching and Model-Based Control," in *International Conference on Intelligent Robots and Systems (IROS)*, Sep 2021.

[7] Flavio De Vincenti, Dongho Kang, and Stelian Coros, "Control-Aware Design Optimization for Bio-Inspired Quadruped Robots," in *International Conference on Intelligent Robots and Systems (IROS)*, Sep 2021.

[8] Changu Kim, Hyunsoo Yang, Dongho Kang and Dongjun Lee, "2-D Cooperative Localization with Omni-Directional Mobile Robots," in *International Conference on Ubiquitous Robots and Ambient Intelligence*, Oct 2015.

THESIS

[1] Dongho Kang, "Animal Motion Imitation For Adaptive and Lifelike Control of Legged Robots," Doctoral thesis, Department of Computer Science, ETH Zürich, 2025.

[2] Dongho Kang, "End-to-End Collision Avoidance from Depth Input with Memory-based Deep RL," Master's thesis, Department of Mechanical and Process Engineering, ETH Zürich, Aug 2019.

INVITED TALK

- **Computational Methods for Animal Motion Imitation** — Aug 2024
  Biomimetic Robotics Lab, Massachusetts Institute of Technology
  Cambridge, United States
- **Computational Robotics for Legged Robots: Control and Co-design** — May 2024
  Speakers: Dongho Kang and Gabriele Fadini
  Johou Systems Kougaku Laboratory, University of Tokyo
  Tokyo, Japan
- **Computational Robotics: Legged Robotics and Construction Robotics** — May 2024
  Speakers: Yijiang Huang, Dongho Kang and Gabriele Fadini
  Suzumori Laboratory, Tokyo Institute of Technology
  Tokyo, Japan
- **Motion Capture-Driven Legged Locomotion Control** — Dec 2022
  Interactive and Networked Robotics Lab, Seoul National University,
  Seoul, South Korea

AWARDS & SCHOLARSHIPS

- Birkigt Scholarship, ETH Zürich — Feb 2018
  Stipendiary scholarship for international master student.
- Eminence Scholarship, Seoul National University — Aug 2014
  Full-tuition scholarship for one academic semester for outstanding academic performance.
- Development Fund Scholarship, Seoul National University — Feb 2010
  Full-tuition scholarship for one academic year for outstanding academic performance.

TEACHING EXPERIENCE

ETH Zürich, Zurich, Switzerland

- Teaching Assistant, Stochastics and ML (A. Streich, C. Cotrini, F. Friedrich) — Spring 2025
- Teaching Assistant, Introduction to Machine Learning (F. Perez-Cruz, F. Yang) — Spring 2024

- Teaching Assistant, Computer Science (M. Fischer, F. Friedrich) Autumn 2023
- Teaching Assistant, Digital Humans (S. Coros, Siyu Tang) Spring 2023
- Teaching Assistant, Linear Algebra (Ö. Imamoglu, O. Sorkine-Hornung) Autumn 2022
- Teaching Assistant, Computational Models of Motion (S. Coros, B. Thomaszewski) 2021 – 2022
- Teaching Assistant, Visual Computing (S. Coros, M. Pollefeys) 2020 – 2021

Seoul National University, Seoul, South Korea

- Mentor, SNU Samsung Convergence Software Course Program 2015
- Teaching Assistant, MAE 446.204A: Dynamics 2014
- Teaching Assistant, PA 034.013: Basic Physics 2 Autumn 2011

TECHNICAL SKILLS

Programming and Software

C/C++, Python, Matlab/Octave, Unix/Linux, Tensorflow, Pytorch, ROS, Open Dynamics Engine, IsaacSim

Experience with Robots

UnitreeRobotics AlienGo/A1/Go1/Go2/B2/G1, ANYbotics ANYmal

SERVICES

Reviewer

RA-L, IROS, ICRA, RSS, CoRL, Humanoids, BioRob, Eurographics, TIE

LANGUAGES

- Korean: Native language.
- English: Fluent.

REFERENCES

- **Prof. Dr. Stelian Coros**
  Associate Professor in the Department of Computer Science
  ETH Zürich
  scoros@inf.ethz.ch
- **Prof. Dr. Marco Hutter**
  Professor in the Department of Mechanical and Process Engineering
  ETH Zürich
  mahutter@ethz.ch
- **Prof. Dr. Dongjun Lee**
  Professor in the Department of Mechanical Engineering
  Seoul National University
  djlee@snu.ac.kr