

Daeun Song

Computer Science and Engineering · Robotics

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Research Interests

Robot Path and Motion Planning, Computational Geometry, Machine Learning

Education

Ewha Womans University, Seoul, Korea

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| 2017 - 2023 | Ph.D in Computer Science and Engineering <ul style="list-style-type: none">• Advisor : Young J. Kim• Dissertation : “Artistic Robotic Pen Drawing System using High-DoF Manipulators”• Graduate student representative of CSE department in 2020 |
| 2013 - 2017 | B.S. in Computer Science and Engineering |

Research Experience

University of Maryland, MD, USA

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| AUG 2023 | GAMMA, Postdoctoral Associate [H11] |
| - Present | <ul style="list-style-type: none">• Advisor Dinesh Manocha |

Ewha Womans University, Seoul, Korea

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| MAR 2023 | Graphics Lab, Postdoctoral Researcher |
| - JUN 2023 | <ul style="list-style-type: none">• Advisor: Young J. Kim |
| JAN 2016 | Graphics Lab, Undergraduate Researcher [J01] |
| - FEB 2017 | <ul style="list-style-type: none">• Advisor: Young J. Kim |

LAAS-CNRS, Toulouse, France













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| JUN 2019 | Gepetto Team, Summer Internship [J02], [C03] |
| - SEP 2019 | <ul style="list-style-type: none">• Advisor: Steve Tonneau. |

Publications



International Journals

- [J03] **D. Song, J. Kim, Y. J. Kim, SSK: Robotic Pen-art System for Large, Non-planar Canvas, *IEEE Transactions on Robotics (T-RO)**, 39(4), Aug. 2023.** 🏠 📺 📺
- [J02] **D. Song, P. Fernbach, T. Flayols, A. D. Prete, N. Mansard, S. Tonneau, Y. J. Kim, Solving Footstep Planning as a Feasibility Problem using L1-norm Minimization, *IEEE Robotics and Automation Letters (RA-L)**, 6(3), July 2021.** 🏠 📺 📺
- [J01] **Y.-h. Kim, T. Kwon, D. Song, Y. J. Kim, Full-body Animation of Human Locomotion in Reduced Gravity using Physics-based Control, *IEEE Computer Graphics and Applications (CG&A)**, (Special issue on Physically Based Animation), 37(6), Nov/Dec 2017.** 🏠 📺 📺

International Conference Papers

- [C06] **D. Song**, E. Lim, J. Park, M. Jung, Y. J. Kim, **TSP-Bot: Robotic TSP Pen Art using High-DoF Manipulators**, *under review*. 
- [C05] I. Ilinkin, **D. Song**, Y. J. Kim, **Stroke-based Rendering and Planning for Robotic Performance of Artistic Drawing**, *IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, Oct 2023. 
- [C04] J. Chemin, P. Fernbach, **D. Song**, G. Saurel, N. Mansard, S. Tonneau, **Learning to steer a locomotion contact planner**, *IEEE International Conference on Robotics and Automation (ICRA)*, May 2021. 
- [C03] S. Tonneau, **D. Song**, P. Fernbach, N. Mansard, M. Taix, A. D. Prete, **SL1M: Sparse L1-norm Minimization for contact planning on uneven terrain**, *IEEE International Conference on Robotics and Automation (ICRA)*, May 2020.   
- [C02] **D. Song**, Y. J. Kim, **Distortion-free Robotic Surface-drawing using Conformal Mapping**, *IEEE International Conference on Robotics and Automation (ICRA)*, May 2019.    [H08]
- [C01] **D. Song**, T. Lee, Y. J. Kim, **Artistic Pen Drawing on an Arbitrary Surface using an Impedance-controlled Robot**, *IEEE International Conference on Robotics and Automation (ICRA)*, May 2018.    [H07]

Domestic Conference Papers

- [D04] **D. Song**, Y. J. Kim, Robotic Pen-art System for Large, Non-planar Canvas (extended abstract of [J03]), *Korea Computer Graphics Society Annual Conference (KCGS)*, Jul 2022.
- [D03] E. Lim, J. Kim, **D. Song**, Y. J. Kim, TSP Pen Art using a Mobile Collaborative Robot (extended abstract of [C05]), *Korea Computer Graphics Society Annual Conference (KCGS)*, Jul 2021.   [H10 - Best Undergrad Paper Award]
- [D02] **D. Song**, Y. J. Kim, Distortion-free Robotic Surface-drawing using Conformal Mapping (extended abstract of [C02]), *Korea Robotics Society Annual Conference (KRoC)*, Aug 2020.
- [D01] **D. Song**, T. Lee, Y. J. Kim, Artistic Pen Drawing on an Arbitrary Surface using an Impedance-controlled Robot (extended abstract of [C01]), *Korea Robotics Society Annual Conference (KRoC)*, Jan 2018. [H06 - Best Paper Award]

* : SCI (Science Citation Index)-listed journals

Patents

- [P01] Y. J. Kim, **D. Song**, J. Kim, Robotic apparatus and method for artistic pen drawing on an arbitrary surface, Korean intellectual Property Office, 1019356400000

Technical Skills

Programming Languages: C/C++, Python, Java, Matlab

Robotic Hardware: KUKA iiwa 7 R800 manipulator, UR5e dual arm w/ Robotiq 3F gripper, Ridgeback mobile platform, Fetch mobile manipulator, Turtlebot3

Robotic Programming: ROS, OMPL, HPP, MoveIt!, Coppeliasim, Isaac Sim

Others: Experience with OpenGL, OpenCV, PCL, PyTorch, Tensorflow

Honors & Awards

- [H11] **MRC Postdoctoral Fellowship** | Maryland Robotics Center, University of Maryland (2023-2024))
- [H10] **Best Undergrad Paper Award** | Korea Computer Graphics Society Annual Conference (KCGS 2021)
- [H09] **Solvay Scholarship Award** | Outstanding Academic Performance (2019 - 2020)
- [H08] **RAS Travel Award** | International Conference on Robotics and Automation (ICRA 2019)
- [H07] **RAS Travel Award** | International Conference on Robotics and Automation (ICRA 2018)
- [H06] **Best Paper Award** | The 13th Korea Robotics Society Annual Conference (KRoC 2018)
- [H05] **Participation Award** | Hanium Expo Contest 2016
- [H04] **Special Award** | Capston Awards (Engineering Education Festa 2016)
- [H03] **1st Place** | Ewha Engineering Capstone Design Contest 2016
- [H02] **1st Place** | Ewha Engineering Student Portfolio Contest 2016
- [H01] **2nd Place** | Ewha Power ProgrammER(E-PPER) Contest 2016

Activities

Academic

- **Teaching Assistant** | Introduction to Physically-based Animation (Graduate) *Spring 2023*
- **Teaching Assistant** | Numerical Methods (Undergrad) *Spring 2022*
- **Teaching Assistant** | Computer Programming (Undergrad) *Spring 2016*

Talks & Demos

- **DEMO** | Drawing simulation demo, ITRC Forum 2022 *APR 2022*
- **TALK** | The 5th NZ/KOREA Workshop on HDI4D *NOV 2017*
- **DEMO** | Drawing robot demo, Engineering Education Festa 2016 *NOV 2016*
- **DEMO** | Drawing robot demo, Hanium Expo 2016 *NOV 2016*

Others

- **Summer School** | Participate, AI & Robotics Summer School 2020 *AUG 2020*
- **Tutorial** | Participate, Reinforcement Learning Tutorial *JAN 2017*
- **Tutorial** | Participate, Arduino & IoT Sensing and Wireless Communication Control Tutorial *JAN 2016*
- **Summer School** | Participate, EWHA-EPITA Sumer School, Paris, France *JUL 2015*