SUDONG LEE

Google Scholar ◇ LinkedIn
ORCID: 0000-0002-8928-6070

EDUCATION

Ph.D. student in Robotics, Control, and Intelligent Systems (EDRS) 2023.04. - present
EPFL (École Polytechnique Fédérale de Lausanne) *Lausanne, Switzerland.*
Advisor: Prof. Josie Hughes

M.S. in Mechanical Engineering 2019.03. - 2021.08.
Seoul National University *Seoul, Korea.*
Advisor: Prof. Yong-Lae Park
Thesis: Modularized Robotic Skin Sensorized by Fiber Optic Force Sensing for Remote and Autonomous Robot Operation

B.S. in Mechanical Engineering 2013.03. - 2019.02.
Korea University *Seoul, Korea.*

RESEARCH EXPERIENCE

CREATE Lab (Computational design of Robots and Embodied Autonomous TEchnologies Laboratory)
- *EPFL* *Lausanne, Switzerland.*
Assistant-doctorant 2023.04. - present

Soft Robotics Research Center (SRRC)
- *Seoul National University* *Seoul, Korea.*
Research Associate 2022.09. - 2023.03.
Research Assistant 2021.09. - 2022.08.
Research topics:
· Fiber Jamming Actuator driven by Tendons to Enhance Adaptability
· Robotic Skin using 3-DoFs Force Sensor for Dexterous and Safe Interaction

Soft Robotics and Bionics Laboratory (SRBL)
- *Mechanical Engineering, Seoul National University* *Seoul, Korea.*
Graduate Student Researcher 2019.01. - 2021.08.
Research topics:
· Robotic Skin Sensorized by Fiber Optic Strain Sensors
· Multi-modal Locomotion and Environmental Adaptability of Legged Robots
· Soft Electronics and Sensors using Stretchable Materials and Sensing Mechanisms

HONORS AND AWARDS

M.S. Thesis Presentation Award 2021.06.
Mechanical Engineering, Seoul National University

Third Place Award for Locomotion Challenge 2019.04.
IEEE International Conference on Soft Robotics 2019 (RoboSoft 2019)
Team SRBL (Sudong Lee, G. Shin, J. Kim, M. Choi, Y. Baek, and Y.-L. Park)

Great Honor, Winter 2018 Graduation 2019. 02.
Korea University

Semester High Honors
Korea University
1^{st} Semester, 2013.,
2^{nd} Semester, 2013.,
1^{st} Semester, 2014.,
2^{nd} Semester, 2014.,
1^{st} Semester, 2015.,
2^{nd} Semester, 2017.,
1^{st} Semester, 2018.

SCHOLARSHIPS

Kwanjeong Fellowship — 1^{st} Semester, 2019., 2^{nd} Semester, 2019., 1^{st} Semester, 2020., 2^{nd} Semester, 2020.
Kwanjeong Educational Foundation

National Science and Engineering Scholarship — 1^{st} Semester, 2015., 2^{nd} Semester, 2017., 1^{st} Semester, 2018., 2^{nd} Semester, 2018.
Korea Student Aid Foundation

Academic Excellence Scholarship — 2^{nd} Semester, 2014.
Korea University

Best Honor Scholarship — 1^{st} Semester, 2014.
Korea University

PUBLICATIONS

Journal Papers

1. A. Georgopoulou, **Sudong Lee**, B. Dai, F. Bono, J. Hughes, and E. Amstad, "3D printing of self-healing longevous multi-sensory e-skin," *Communications Materials*, vol. 6, no. 121, 2025. *(DOI: 10.1038/s43246-025-00839-7)*
2. **Sudong Lee***, J. I. Kim*, Y. Baek, D. Chang, J. Lee, Y. S. Park, D. Lee, and Y.-L. Park, "Fiber-optic force sensing of modular robotic skin for remote and autonomous robot control," *IEEE Transactions on Robotics*, vol. 40, pp. 2373-2389, 2024. *(DOI: 10.1109/TRO.2024.3378178)*
: Sudong Lee and J. I. Kim are co-first authors.
3. D. Kim, **Sudong Lee**, T. H. Hong, and Y.-L. Park, "Exploration-based model learning with self-attention for risk-sensitive robot control," *npj Robotics*, vol. 1, no. 7, 2023. *(DOI: 10.1038/s44182-023-00006-5)*
4. J. Kang*, **Sudong Lee***, and Y.-L. Park, "Soft bending actuator with fiber-jamming variable stiffness and fiber-optic proprioception," *IEEE Robotics and Automation Letters*, vol. 8, no. 11, pp. 7344-7351, 2023. *(DOI: 10.1109/LRA.2023.3316075)*
: Sudong Lee and J. Kang are co-first authors.
5. T. Kim*, **Sudong Lee***, S. Chang, S. Hwang, and Y.-L. Park, "Environmental adaptability of legged robots with cutaneous inflation and sensation," *Advanced Intelligent Systems*, 2300172, 2023. *(DOI: 10.1002/aisy.202300172)*
: Sudong Lee and T. Kim are co-first authors.
Cover Article: 10.1002/aisy.202370050, Editor's Choice: [Link]
6. Y. Lee, S. Lim, W. J. Song, **Sudong Lee**, S. J. Yoon, J.-M. Park, M.-G. Lee, Y.-L. Park, and J.-Y. Sun, "Tri-boresistive touch sensing: grid-free touch-point recognition based on monolayered ionic power generators," *Advanced Materials*, vol. 34, no. 19, 2108586, 2022.
(DOI: 10.1002/adma.202108586)
7. G. Shin*, **Sudong Lee***, and Y.-L. Park, "Selective patterning of conductive elastomers embedded with silver powders and carbon nanotubes for stretchable electronics," *IEEE Robotics and Automation Letters*, vol. 7, no. 2, pp. 4983-4990, 2022. *(DOI: 10.1109/LRA.2022.3153707)*
: Sudong Lee and G. Shin are co-first authors.
8. T. Kim, **Sudong Lee**, T. Hong, G. Shin, T. Kim, and Y.-L. Park, "Heterogeneous sensing in a multifunctional soft sensor for human-robot interfaces," *Science Robotics*, Vol. 5, No. 49, eabc6878, 2020. *(DOI: 10.1126/scirobotics.abc6878)*

Conference Papers

1. **Sudong Lee** and J. Hughes, "Morphological and material programability of a hall-effect based soft tactile sensors," *2024 IEEE 7th International Conference on Soft Robotics (RoboSoft)*, San Diego, CA, USA, 2024, pp. 325-331. *(DOI: 10.1109/RoboSoft60065.2024.10521990)*

CONFERENCE PRESENTATIONS

1. A. Georgopoulou, **Sudong Lee**, B. Dai, J. Hughes, and E. Amstad, "Multimodal selective sensory receptors for robotic e-skin," *2025 IEEE 8th International Conference on Soft Robotics (RoboSoft)*, Lausanne, Switzerland, 2025.
2. **Sudong Lee***, J. I. Kim*, Y. Baek, D. Chang, J. Lee, Y. S. Park, D. Lee, and Y.-L. Park, "Fiber-optic force sensing of modular robotic skin for remote and autonomous robot control," *2024 IEEE/RSJ International Conference on*

Intelligent Robots and Systems (IROS), Abu Dhabi, UAE, 2024.
: Sudong Lee and J. I. Kim are co-first authors.

3. J. Kang*, **Sudong Lee***, and Y.-L. Park, "Soft bending actuator with fiber-jamming variable stiffness and fiber-optic proprioception," *2024 IEEE International Conference on Robotics and Automation (ICRA)*, Yokohama, Japan, 2024.
: Sudong Lee and J. Kang are co-first authors.

4. G. Shin*, **Sudong Lee***, and Y.-L. Park, "Selective patterning of conductive elastomers embedded with silver powders and carbon nanotubes for stretchable electronics," *2022 IEEE 5th International Conference on Soft Robotics (RoboSoft)*, Edinburgh, United Kingdom, 2022.
: Sudong Lee and G. Shin are co-first authors.

PATENTS

1. T. Kim, **Sudong Lee**, and Y.-L. Park, "Soft Sensor with Multi-Sensing Function," 2022.
(Korea Patent: 10-2384623)

TEACHING EXPERIENCE

ME-320: Product development and engineering design Autumn semester, 2024.
- Mechanical Engineering, EPFL
Teaching assistant, Instructor: Prof. Josie Hughes.

Interdisciplinary robot competition Spring semester, 2024.
- EPFL
Team coach, Instructor: Prof. Auke J. Ijspeert.

ME-320: Product development and engineering design Autumn semester, 2023.
- Mechanical Engineering, EPFL
Teaching assistant, Instructor: Prof. Josie Hughes.

M2794.001700_001: Mechanical product design 1^{st} semester, 2019.
- Mechanical Engineering, Seoul National University
Teaching assistant, Instructor: Prof. Yong-Lae Park.

ACADEMIC SERVICE

Reviewer - Journal Papers
IEEE Transactions on Robotics (T-RO)
IEEE/ASME Transactions on Mechatronics (T-MECH)
IEEE Robotics and Automation Letters (RA-L)
Nature Communications
Soft Robotics

Reviewer - Conference Papers
IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)
IEEE International Conference on Soft Robotics (RoboSoft)

TECHNICAL STRENGTHS (SKILLS)

Programming Languages	C++, Python, Matlab
Embedded System	Arduino, AVR ATmega, Single-Board Computer (SBC)
Software for System and Robots	ROS, Pybullet
Machine Learning	Pytorch, TensorFlow
Design and Simulation	3D Computer-Aided Design (CAD), Finite Element Analysis (FEA) Software
Fabrication	3D Printing (Additive Manufacturing), Silicone Fabrication

OTHER EXPERIENCE

Republic of Korea Air Force (ROKAF, Military Service) 2015.08. - 2017.08.
Staff Sergeant, Honorable discharge.