

SUDONG LEE

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EDUCATION

Ph.D. student in Robotics, Control, and Intelligent Systems (EDRS) <i>EPFL (Swiss Federal Institute of Technology in Lausanne)</i> <i>Advisor: Prof. Josie Hughes</i>	2023.04. - present <i>Lausanne, Switzerland.</i>
M.S. in Mechanical Engineering <i>Seoul National University</i> <i>Advisor: Prof. Yong-Lae Park</i> <i>Thesis: Modularized Robotic Skin Sensorized by Fiber Optic Force Sensing for Remote and Autonomous Robot Operation [Link]</i>	2019.03. - 2021.08. <i>Seoul, Korea.</i>
B.S. in Mechanical Engineering <i>Korea University</i>	2013.03. - 2019.02. <i>Seoul, Korea.</i>

RESEARCH EXPERIENCE

Computational Robot Design & Fabrication Laboratory (CREATE Lab) <i>- EPFL (École Polytechnique Fédérale de Lausanne)</i> <i>Assistant-doctorant</i>	<i>Lausanne, Switzerland.</i> 2023.04. - present
Soft Robotics Research Center (SRRC) <i>- Seoul National University</i> <i>Research Associate</i> <i>Research Assistant</i> <i>Research topics:</i> <ul style="list-style-type: none">· Fiber Jamming Actuator driven by Tendons to Enhance Adaptability· Robotic Skin using 3-DoFs Force Sensor for Dexterous and Safe Interaction	<i>Seoul, Korea.</i> 2022.09. - 2023.03. 2021.09. - 2022.08.
Soft Robotics and Bionics Laboratory (SRBL) <i>- Mechanical Engineering, Seoul National University</i> <i>Graduate Student Researcher</i> <i>Research topics:</i> <ul style="list-style-type: none">· 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	<i>Seoul, Korea.</i> 2019.01. - 2021.08.

HONORS AND AWARDS

M.S. Thesis Presentation Award <i>Mechanical Engineering, Seoul National University</i>	2021.06.
Third Place Award for Locomotion Challenge <i>IEEE International Conference on Soft Robotics 2019 (RoboSoft 2019)</i> <i>Team SRBL (Sudong Lee, G. Shin, J. Kim, M. Choi, Y. Baek, and Y.-L. Park)</i>	2019.04.
Great Honor, Winter 2018 Graduation <i>Korea University</i>	2019. 02.
Semester High Honors <i>Korea University</i>	1 st Semester, 2013., 2 nd Semester, 2013., 1 st Semester, 2014., 2 nd Semester, 2014., 1 st Semester, 2015.,

SCHOLARSHIPS

Kwanjeong Fellowship Kwanjeong Educational Foundation	1 st Semester, 2019., 2 nd Semester, 2019., 1 st Semester, 2020., 2 nd Semester, 2020.
National Science and Engineering Scholarship Korea Student Aid Foundation	1 st Semester, 2015., 2 nd Semester, 2017., 1 st Semester, 2018., 2 nd Semester, 2018.
Academic Excellence Scholarship Korea University	2 nd Semester, 2014.
Best Honor Scholarship Korea University	1 st Semester, 2014.

PUBLICATIONS

Journal Papers

1. 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](https://doi.org/10.1126/scirobotics.abc6878))
2. 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](https://doi.org/10.1109/LRA.2022.3153707))
*: **These authors contributed equally to this work.**
3. 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, "Triboresistive 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](https://doi.org/10.1002/adma.202108586))
4. 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](https://doi.org/10.1002/aisy.202300172))
*: **These authors contributed equally to this paper.**
5. J. Kang*, **Sudong Lee***, and Y.-L. Park, "Soft Bending Actuator with Fiber-Jamming Variable Stiffness and Fiber-Optic Proprioception." (*Accepted, IEEE Robotics and Automation Letters.*)
*: **These authors contributed equally to this paper.**
6. **Sudong Lee***, J. I. Kim*, Y. Baek, D. Chang, J. Lee, Y. S. Park, D. Lee, and Y.-L. Park, "Modularized Robotic Skin Sensorized by Fiber Optic Force Sensing for Remote and Autonomous Robot Operation." (*Under review, Submitted to IEEE Transactions on Robotics.*)
*: **These authors contributed equally to this work.**
7. D. Kim, **Sudong Lee**, T. H. Hong, and Y.-L. Park, "Robust Online Model Identification for Versatile Robot Control Based on Self-Attention Learning." (*Under review, Submitted to npj Robotics.*)
In preparation - Robotic Skin using 3-DoFs Force Sensor with Soft Chamber

Conference Papers and Posters

1. G. Shin*, **Sudong Lee***, and Y.-L. Park, "Selective Patterning of Conductive Elastomers Embedded with Silver Powders and Carbon Nanotubes for Stretchable Electronics," *IEEE International Conference on Soft Robotics 2022 (Robosoft 2022)*.
*: **These authors contributed equally to this work.**

PATENTS

1. J. I. Kim, **Sudong Lee**, Y. Baek, and Y.-L. Park, "Modularized Robotic Skin," 2020.
(Korea Appl. No.: 1,020,200,148,802)
2. T. Kim, **Sudong Lee**, and Y.-L. Park, "Soft Sensor with Multi-Sensing Function," 2022.
(Korea Patent: 102,384,623)

TEACHING EXPERIENCE

M2794.001700_001: Mechanical Product Design 1st Semester, 2019.
- Mechanical Engineering, Seoul National University
Teaching assistant, Instructor: Prof. Yong-Lae Park.

ACADEMIC SERVICE

Reviewer - Journal Papers
IEEE Robotics and Automation Letters 2023.
Soft Robotics 2023.

Reviewer - Conference Paper
IEEE/RSJ International Conference on Intelligent Robots and Systems 2023 (IROS 2023) 2023.

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.