

# SUDONG LEE

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## EDUCATION

<b>Ph.D. student in Robotics, Control, and Intelligent Systems (EDRS)</b> <i>EPFL (Swiss Federal Institute of Technology in Lausanne)</i> <i>Advisor: Prof. Josie Hughes</i>	2023.04. - present <i>Lausanne, Switzerland.</i>
<b>M.S. in Mechanical Engineering</b> <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 [<a href="#">Link</a>]</i>	2019.03. - 2021.08. <i>Seoul, Korea.</i>
<b>B.S. in Mechanical Engineering</b> <i>Korea University</i>	2013.03. - 2019.02. <i>Seoul, Korea.</i>

## RESEARCH EXPERIENCE

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

## HONORS AND AWARDS

<b>M.S. Thesis Presentation Award</b> Mechanical Engineering, Seoul National University	2021.06.
<b>Third Place Award for Locomotion Challenge</b> 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)	2019.04.
<b>Great Honor, Winter 2018 Graduation</b> Korea University	2019. 02.
<b>Semester High Honors</b> Korea University	1 <sup>st</sup> Semester, 2013., 2 <sup>nd</sup> Semester, 2013., 1 <sup>st</sup> Semester, 2014., 2 <sup>nd</sup> Semester, 2014., 1 <sup>st</sup> Semester, 2015.,

## SCHOLARSHIPS

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

## PUBLICATIONS

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### 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. **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.**
5. T. Kim\*, **Sudong Lee\***, S. Chang, S. Hwang, Y.-L. Park, "Multi-modal Locomotion and Environmental Adaptability of Legged Robots using Soft Inflatable Sensing Skin." (Under review, Submitted to *Advanced Intelligent Systems*.)  
\*: **These authors contributed equally to this paper.**
6. J. Kang\*, **Sudong Lee\***, Y.-L. Park, "Soft Bending Actuator with Fiber-Jamming Variable Stiffness and Fiber-Optic Proprioception." (Submitted to *IEEE Robotics and Automation Letters*.)  
\*: **These authors contributed equally to this paper.**
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

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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

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

## TECHNICAL STRENGTHS (SKILLS)

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

## OTHER EXPERIENCE

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