Sudong Lee

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Seoul National University, 1, Gwanak-ro, Gwanak-gu, Seoul 08826, Korea.

Education

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

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

Research Experience

Soft Robotics Research Center (SRRC)
- *Seoul National University* Seoul, Korea.
Research Associate *2022.09. - present*
Research Assistant *2021.09. – 2022.08.*
Research topics:
Fiber Jamming Actuator driven by Tendon 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 *2013 - 2018*
Korea University

Scholarships

Kwanjeong Fellowship 1st Semester, 2019. -
Kwanjeong Educational Foundation 2nd Semester, 2020.

National Science and Engineering Scholarship 1st Semester, 2015. -
Korea Student Aid Foundation 2nd Semester, 2018.

Academic Excellence Scholarship 2nd Semester, 2014.
Korea University

Best Honor Scholarship 1st Semester, 2014.
Korea University

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)*

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)*
: 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)*

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." *(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." *(Prepared to submit)*
: These authors contributed equally to this paper.

6. D. Kim, **Sudong Lee**, T. H. Hong, and Y.-L. Park, "Robust Online Model Identification for Versatile Robot Control Based on Self-Attention Learning." *(Prepared to submit)*

In preparation - Fiber Jamming Actuator driven by Tendon with Image Sensing of Optic Fiber
- 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.

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