# Wonjun Lee

*MECHANICAL ENGINEERING PH.D. APPLICANT*

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## Personal Profile

An undergraduate student at the Seoul National University, undertaking the mechanical engineering course. Have research interest in the provision and utilization of a tool for the quantitative assessment of biological systems.

## Education

**Seoul National University(SNU)** *Seoul, South Korea*

B.S. in Mechanical Engineering *Mar 2016 - Exp. Feb 2022*

- Cumulative GPA: 3.93/4.3 (Major: 3.95/4.3, Upper: 4.13/4.3)
- Two years of absence to fulfill military duty (Mar. 2018 - Feb. 2020)

**Bucheon High School** *Seoul, South Korea*

High School *Mar 2013 - Feb 2016*

- 1st Best Graduate

## Research Experience

**Center for Healthcare Robotics, KIST** *Seoul, South Korea*

Research Intern *Mar 2021 - Feb 2022*

- Advised by Professor Seungbeum Suh
- Designed a microfluidic device that leverages spontaneous capillary flow under hydrophilic conditions through rapid prototyping, allowing for selective patterning of hydrogels in specified regions and co-culture of two or more cell types.
- Demonstrated the effects of bacterial stimulation on tumor spheroid and corresponding pro-inflammatory response of macrophages experimentally, and therefore emulatated the fundamental constituents of bacteria-colonized tumor-microenvironment *in vitro*.
- **Reconstituting Fundamentals of Bacteria Mediated Cancer Therapy on a Chip**, Wonjun Lee, Jiin Park, Dongil Kang, Seungbeum Suh, 36th International Conference on Micro Electro Mechanical Systems(MEMS), 2023(Accepted)

**Multiscale Biomedical Engineering Laboratory, SNU** *Seoul, South Korea*

Undergraduate Intern *Feb 2021 - present*

- Advised by Professor Noo Li Jeon
- Developed a graph convolution network consisting of edge convolution and cascaded attention module, and improved the deep learning network's skeleton segmentation capacity.
- Proposed and implemented a pointcloud base 3D analysis pipeline optimized for quantifying angiogenic vasculature in microfluidic platform, and achieved on average a 47.9% reduction of error over the conventional maximum intensity projection analysis method.
- **Machine learning-aided quantification of 3D angiogenic vasculature in multiculture microfluidic platform**, Wonjun Lee*, Byoungkwon Yoon*, Jungseub Lee, Sangmin Jung, Noo Li Jeon, In progress

## Award, Fellowships,& Grants

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|---|---|---|
| 2016 | **Bucheon Jang-hak Foundation Scholarship (2-semesters),** Bucheon Jang-hak Foundation | *50% of tuition* |
| Jul 2016 | **Merit-based Scholarship,** Seoul National University | *30% of tuition* |
| Mar 2017 | **Merit-based Scholarship,** Seoul National University | *50% of tuition* |
| Mar 2018 | **Merit-based Scholarship,** Seoul National University | *50% of tuition* |
| Jul 2020 | **Merit-based Scholarship,** Seoul National University | *full-tuition* |
| Jul 2020 | **Grand award in Mechanical Product Design Course Design Contest,** Seoul National University | |
| Mar 2021 | **SNU Development Fund Scholarship,** Sangjin Jang-hak Foundation | *50% of tuition* |

## Work Experience & Extracurricular Activities

**MEMS in Mechanical Engineering** *Seoul National University*

Peer Tutor *Jul 2021 - Feb 2022*

- Managed and adviced modeling for 3D printing.
- Guided lab tour and explained fundamentals of different 3D printing methods and their application on research.

**SNU Mentoring** *SNU Social Responsibility*

Mentor *Jan 2020 - Jan 2021*

- Mentored high school student in a one-on-one relationship with monthly conversation on topics in science and mechanical engineering.

**Republic of Korea Air Force (ROKAF)** *Seoul, South Korea*

Signal Intelligence Operator (SERGEANT, E-5) *Mar 2018 - Feb 2020*

- Analyzed and interpreted the collected signal intelligence and reported key information to the higher command.
- **Excellence award** in military occupational specialty education.

## Skills

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|---|---|
| **Language** | Python, MATLAB, Verilog, C/C++ |
| **Framework** | PyTorch, Tensorflow, OpenCV, Open3D, Pandas |
| **3D CAD and Printing Tools** | SolidWorks, AutoCAD |
| **Computational Simulation Tools** | COMSOL Multiphysics, Acusolve |

**References available upon request.**