

# Jaewoo Jung

AI/ML Engineer

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## Education

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<b>Yonsei University</b> , Ph.D Candidate in Electrical and Electronics Engineering – Seoul, South Korea	Mar 2020 – present
• Advisor: Prof. Seung Ah Lee	
<b>Yonsei University</b> , B.S. in Electrical and Electronics Engineering – Seoul, South Korea	Mar 2015 – Feb 2020

**Changwon Science High School**, in Chemistry – Changwon, South Korea Mar 2013 – Feb 2015

- Early Graduated

## Experience

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<b>Research Engineer</b> , Seoul National University – Seoul, South Korea	July 2025 – present
Imaging intelligence Laboratory, supervised by Prof. Seung Ah Lee	
• Researched deep learning-based research on lensless image reconstruction	
• Oversaw GPU server operation, maintenance, and resource management	
<b>Research Engineer</b> , LUXROBO Co., Ltd. – Seoul, South Korea	July 2023 – June 2025
MODI Factory	
• Designed and developed AI models for automated PCB component placement and routing	
• Built backend systems in Golang for AI-driven EDA workflows	
• Deployed and validated AI model serving pipelines	
• Implemented LLM-based systems for intelligent electronic component categorization and recommendation	
• Constructed structured databases for electronic component management	
<b>Graduate Research Assistant</b> , Yonsei University – Seoul, South Korea	Mar 2020 – Aug 2023
Optical Imaging Laboratory, supervised by Prof. Seung Ah Lee	
• Researched deep learning-based research on lensless image reconstruction	
• Researched lensless holographic microscopy and image reconstruction methods	
• Oversaw GPU server operation, maintenance, and resource management	
<b>Internship</b> , Yonsei University – Seoul, South Korea	Jan 2019 – Mar 2020
Optical Imaging Laboratory, supervised by Prof. Seung Ah Lee	
• Researched lensless holographic microscopy and image reconstruction methods	
• Researched human–biological interactions	
<b>Co-Founder &amp; Engineer</b> , Toky – Seoul, South Korea	July 2019 – Feb 2020
Tabletop voice-controlled kiosk	
• Developed and optimized embedded firmware for voice recognition systems	
• Fine-tuned speech recognition models for on-device inference	

<b>Internship</b> , Yonsei University – Seoul, South Korea	Aug 2016 – Dec 2018
Biological Cybernetics Laboratory, supervised by Prof. Dae Eun Kim	
<ul style="list-style-type: none"> <li>• Researched swarm robotics using vibration-based locomotion robots</li> <li>• Designed and fabricated experimental robotic hardware</li> <li>• Developed ESP32-based firmware for robot control and communication(Wi-Fi, BLE)</li> <li>• Implemented over-the-air (OTA) update systems for robot firmware updates</li> </ul>	

<b>Research Engineer</b> , LUXROBO Co., Ltd. – Seoul, South Korea	Mar 2017 – Dec 2017
Embedded Firmware Development	
<ul style="list-style-type: none"> <li>• Developed ESP32-based firmware for MODI network modules</li> <li>• Architected Wi-Fi and BLE protocol stacks for modular devices</li> <li>• Designed and validated a Bluetooth 5 mesh networking prototype</li> <li>• Conducted RTOS performance and reliability testing using Contiki OS</li> </ul>	

## Skills

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**Languages:** Python, C/C++, Go, MATLAB

**ML Frameworks:** PyTorch

**Tools:** Docker, Git, EasyEDA, SketchUp

**Languages:** Korean (Native), English (Fluent)

## Peer-reviewed Publications

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<b>Rolling shutter speckle plethysmography for quantitative cardiovascular monitoring</b>	2024
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Y. Lee, S. Byun, C. Yi, J. Jung, S. A. Lee  
[10.1364/BOE.511755](https://doi.org/10.1364/BOE.511755) (Biomedical Optics Express)

<b>High-resolution display screen as programmable illumination for Fourier ptychography</b>	2024
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K. Lee, K. C. Lee, J. Jung, H. Chae, S. A. Lee  
[10.1016/j.optlaseng.2024.108121](https://doi.org/10.1016/j.optlaseng.2024.108121) (Optics and Lasers in Engineering)

<b>Design and single-shot fabrication of lensless cameras with arbitrary point spread functions</b>	2023
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K. C. Lee, J. Bae, N. Baek, J. Jung, W. Park, S. A. Lee  
[10.1364/OPTICA.466072](https://doi.org/10.1364/OPTICA.466072) (Optica)

<b>Single-shot temporal speckle correlation imaging using rolling shutter image sensors</b>	2022
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C. Yi, J. Jung, J. Im, K. C. Lee, E. Chung, S. A. Lee  
[10.1364/OPTICA.465361](https://doi.org/10.1364/OPTICA.465361) (Optica)

<b>Lensless polarization camera for single-shot full-stokes imaging</b>	2022
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N. Baek, Y. Lee, T. Kim, J. Jung, S. A. Lee  
[10.1063/5.0120465](https://doi.org/10.1063/5.0120465) (APL Photonics)

<b>Fabrication of integrated lensless cameras via uv-imprint lithography</b>	2022
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Y. Lee, H. Chae, K. C. Lee, N. Baek, T. Kim, J. Jung, S. A. Lee  
[10.1109/JPHOT.2022.3157373](https://doi.org/10.1109/JPHOT.2022.3157373) (IEEE Photonics Journal)

<b>A smartphone based fourier ptychographic microscope using the display screen for illumination</b>	2021
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K. C. Lee, K. Lee, J. Jung, S. H. Lee, D. Kim, S. A. Lee  
[10.1021/acsphtics.1c00350](https://doi.org/10.1021/acsphtics.1c00350) (ACS Photonics)

## Patents

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1. Apparatus and method for manufacturing phase masks for lens-less camera (US Patent 12,343,954)
2. Methods for manufacturing phase masks and lens-less camera module (US Patent 12,108,134)
3. Apparatus and method for measuring eye movement (US Patent 12,062,190)
4. Smartphone for obtaining Fourier ptychography image and method for obtaining Fourier ptychography image using smartphone (US Patent 11,880,965)

## Conference Presentations(Selected)

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### **Multi-view Lensless Imaging using 3D Gaussian Splatting**

2025

*J. Jung, D. Bae, K. C. Lee, S. A. Lee*

(Poster, Advanced Biophotonics Conference, SPIE)

### **Jointly Optimized Lensless Imaging System with Trainable Phase Mask for Task-specific Imaging**

2022

*J. Jung, Y. Lee, S. A. Lee*

(Poster, Advanced Biophotonics Conference, OSK)

### **Jointly Optimized Lensless Imaging System with Trainable Phase Mask for Task-specific Imaging**

2022

*J. Jung, Y. Lee, S. A. Lee*

(Oral, IEEE Region 10 Conference, IEEE/IEIE)

### **EuglPollock: Rethinking Interspecies Collaboration through Art Making**

2022

*K. Lee, Y. Jang, J. Jung, D. H. Kim, H. J. Lee, S. A. Lee*

(Oral, 30th ACM International Conference on Multimedia, ACMMM)

### **Deep Learning Approaches for Image Reconstruction in Lensless Cameras**

2022

*J. Jung, D. Bae, K. C. Lee, N. Baek, T. Kim, E. K. Ryu, S. A. Lee*

(Poster, Gorden Research Conference Image Science, GRC)

### **Image Reconstruction in Lensless Cameras with Unrolled Optimization Algorithms**

2021

*J. Jung, T. Kim, D. Bae, E. K. Ryu, S. A. Lee*

(Oral, ICCE-ASIA, IEEE/IEIE)

### **MicroAquarium: An immersive and interactive installation with living microorganisms**

2020

*K. Lee, J. Jung, S. A. Lee*

(Extended Abstracts(Demo), CHI, ACM)

### **Swarm Robots Using Vibration Motor Control**

2018

*M. Kim, J. Jung, D. E. Kim*

(Oral, ICROS, ICROS)

## Honors & Awards

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- Best Poster Awards, Advanced Biophotonics Conference, SPIE (2025)
- Best Poster Awards, Advanced Biophotonics Conference, Optical Society of Korea (2022)
- Silver Awards, 28th Samsung Humantech Paper Awards, Samsung Electronics (2022)
- Grants, Undergraduate Research Program, KOFAC (2019)
- 4th Awards, International Student Car Competition, KTSA (2019)
- 2nd Awards, International Student Car Competition, KTSA (2018)
- 1st Awards, Embedded Software Contest, KESSIA (2013)
- 1st Awards, R&E Festival, KOSAF (2013)

## Teaching & Services

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- Introduction To Bioengineering For EE, teaching assistant with Prof. Seung Ah Lee (Spring 2023)
- Introduction To Bioengineering For EE, teaching assistant with Prof. Seung Ah Lee (Spring 2021)
- Analog Electronics Lab., teaching assistant with Prof. Seung Ah Lee (Fall 2020)

## Projects

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<b>Arxiv Monitoring Bot</b>	2025
<b>Dev Environment</b>	2024
<b>Various Swarm Behavior Inspired by Nature using Vibration Locomotion Robots</b>	2018
<b>Core-XY Autonomous Chess Board</b>	2019
<b>Localization using Multiple Gyroscope</b>	2018
<b>Autonomous Driving Cart</b>	2017, 2018
<b>Autonomous Driving Model Car</b>	2016, 2017
<b>Humanoid</b> (KHR-1)	2016
<b>LED cube</b> (8×8×8)	2016
<b>Robot Soccer</b>	2016
<b>Unmanned Aerial Vehicle (Quadcopter)</b>	2016
<b>Guitar Effect Pedal</b>	2016
<b>Smartphone Application for Chemistry Experiment</b>	2014
<b>Minesweeper Robot using LEGO Mindstorm</b>	2013
<b>Develop Filters made from ESM's Toxic substances Absorptive Ability</b>	2013

## Extracurricular Activities

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**President**, SBTM (Robotics Club in Yonsei University) Jan 2017 – Dec 2017