

Jongpil Jeong

Master course

Department of Creative Informatics

Graduate School of Computer Science and Systems Engineering

Kyushu Institute of Technology

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EDUCATION

Kyushu Institute of Technology

Iizuka, Fukuoka, Japan

Master of Engineering, Graduate School of Computer Science and Systems Engineering Apr. 2024 — Mar. 2026(Expected)

Department of Creative Informatics (Computer Science and Networks)

Cumulative GPA:3.02/4.00

Thesis (in progress): “*Visibility restoration via spatial frequency domain interpretation under harsh conditions*”

Advisor: Prof. Min-Chul Lee

Dong-A University

Busan, Korea

Bachelor of Engineering in Electronics Engineering

Mar. 2018 — Feb. 2024

(Top 10%; 156 credits completed / 150 required)

Recipient of Academic Excellence Scholarships (5 semesters)

Cumulative GPA:3.91/4.50

RESEARCH INTERESTS

- **Image Processing / Computer Vision**
- **Biomedical Imaging System**
- **Digital Holographic Microscopy (DHM)**
- Optical Signal Processing
- Denoising / Deblurring Algorithm
- Deep Learning / Machine Learning.

SKILLS

Languages Korean (Native), English (OPIc IH), Japanese (Intermediate)

Programming C/C++, Python, MATLAB

Libraries PyTorch, TensorFlow, OpenCV, Qt, Pandas, NumPy, SciPy, Plotly

Tools / OS Docker, L^AT_EX, Digit Cam, Spinnaker SDK, Pylon SDK, Git, Blender, Linux, Windows, macOS

RESEARCH PROJECTS

Development of AR rescue support system for disaster sites with poor visibility using optical signal processing and deep learning

Fukuoka, Tokyo, Japan

May. 2024 — Mar. 2025 (Expected)

- *Research Assistant*
 - Designing and optimizing algorithms based on the ARMS to effectively remove non-uniform scattering media.
 - Currently working on embedding and optimizing the algorithm for real-time processing on the Microprocessor.
- Grant number: JPJ000255 (Funded by Fire and Disaster Management Agency of Japan)
- Grant type: Consigned research

Image processing techniques for visualizing poor-visibility scenes under scattering media

Fukuoka, Japan

- *Research Assistant*

Apr. 2024 — Mar. 2027 (Expected)

 - Led the development of the Adaptive Removal via Mask for Scatter (ARMS) algorithm to enhance visibility in images degraded by scattering media.
 - Resulted in multiple patent applications, including international patents (PCT), protecting the core technology and methodology.
- Grant number: 24K01120 (Funded by KAKEN, JSPS)

Development of a 360-degree Digital Holographic Microscope (DHM) for 3D object profiling

Fukuoka, Japan

- *Research Assistant* Apr. 2024 — Mar. 2025
 - Statistical approach implemented to mitigate phase error and denoise 3D profile reconstructions.
 - Applied a Kalman filter to suppress noise originating from the DC term in the Fourier domain.
 - Grant number: 23K19964 (Funded by KAKEN, JSPS)
- Development of pre-hatching sex determination technology for chickens** Fukuoka, Gifu, Niigata, Ibaraki, Japan
- *Research Assistant* Apr. 2024 — Nov. 2024
 - Developed the core algorithm for high accuracy and efficiency.
 - Led the end-to-end development of core algorithm, achieving improvement in accuracy from 56% to 87% over previous methods.
 - Designed and implemented a Graphic User Interface (GUI) to streamline user interaction.
 - Created and packaged the necessary installer for seamless program distribution and development.
 - Grant type: Joint Research (Funded by a private industry partner under NDA)

PUBLICATIONS

Journal

- [1] **J. Jeong**, and M.-C. Lee, “Scattering Medium Removal Using Adaptive Masks for Scatter in the Spatial Frequency Domain,” *IEEE Access*, vol. 13, pp. 72769–72777, 2025.
DOI:10.1109/ACCESS.2025.3563369

Conference

- [1] Y. Takahashi, **J. Jeong**, M. Cho, and M.-C. Lee, “A research on scattering media removal and photon estimation using COLaNoPS,” *Proc. ICCAS 2025*, (IEEE), Incheon, Korea. (Accepted)
- [2] **J. Jeong**, M. Cho, and M.-C. Lee, “Advanced scattering media removal by modified ARMS and restoration of color information,” *Proc. ICMV 2025*, (SPIE), Paris, France. (Accepted).
- Best Poster Presentation Award
- [3] S. Song, **J. Jeong**, M. Cho, and M.-C. Lee, “Single Haze Removal Method using Peplography,” *Proc. ICMV 2025*, (SPIE), Paris, France. (Accepted).
- [4] **J. Jeong**, M. Cho, and M.-C. Lee, “Scattering media removal under the harsh conditions using adaptive removal via mask for scatter,” *Proc. ITC-CSCC 2025*, (IEEE), Seoul, Korea.
DOI:10.1109/ITC-CSCC66376.2025.11137793
- [5] K. Nakamura, **J. Jeong**, M. Cho, and M.-C. Lee, “Adaptive Optimization of Kalman Filtering in Digital Holographic Microscopy for Improved Noise Reduction,” *Proc. ITC-CSCC 2025*, (IEEE), Seoul, Korea.
DOI:10.1109/ITC-CSCC66376.2025.11137616
- [6] S. Kim, **J. Jeong**, M. Cho, and M.-C. Lee, “Advanced double random phase encryption for simultaneous two primary data,” *Proc. ITC-CSCC 2025*, (IEEE), Seoul, Korea.
DOI:10.1109/ITC-CSCC66376.2025.11137702
- [7] T. Ono, **J. Jeong**, H.-W. Kim, M. Cho, and M.-C. Lee, “Kalman filtering optimization in digital holographic microscopy (DHM),” *Proc. ICCAS 2024*, (IEEE), Jeju, Korea.
DOI:10.23919/ICCAS63016.2024.10773243
- [8] **J. Jeong**, H.-W. Kim, M. Cho, and M.-C. Lee, “A study of noise reduction algorithm using statistical optimization in digital holographic microscopy,” *Proc. JCSSE 2024*, (IEEE), Phuket, Thailand.
DOI:10.1109/JCSSE61278.2024.10613728

Patents

International Patents (PCT)

- [1] M.-C. Lee and **J. Jeong**, Pending
“Image processing apparatus, image processing method, and image processing program,”
PCT Patent Reference No. PCT/JP2025/037681

Domestic Patents

Japan

- [1] M. Kamide, O. Shiba, K. Ozawa, T. Nakaya, M.-C. Lee, **J. Jeong**, and T. Tagami, Sep. 18, 2025
“Sex identification service provision system and sex identification service provision method,”
Japanese Patent Application No. 2025-154965.

- [2] M.-C. Lee and **J. Jeong**,
“Image processing apparatus, image processing method, and image processing program,”
Japanese Patent Application No. 2025-097331. Jun. 10, 2025
- [3] M.-C. Lee and **J. Jeong**,
“Image processing apparatus, image processing method, and image processing program,”
Japanese Patent Application No. 2024-214715. Aug. 30, 2024
- * In accordance with Japanese patent law, these applications are kept confidential and are not publicly disclosed for 18 months following their filing. (Reference)

Additional Research Experience

Computational, Holographic and Optical signal processing Lab.
at Hankyung National University

Visiting Research Student

Advisor: Prof. Myugnjin Cho

Anseong, Gyeonggi-do, Korea
Jan. 2024 — Feb. 2024

3D Optical Imaging System Lab. at Kyushu Institute of Technology

Short-Term Visiting Researcher (Winter 2022 & Summer 2023)

Advisor: Prof. Min-Chul Lee

Fukuoka, Japan
Jan. — Feb. & Jul. — Aug. 2023

- Studied Digital Holographic Microscopy(DHM) and phase error correction
- Developed noise reduction algorithms under low-light (photon-starved) conditions
- Restored low-light images using photon-counting techniques
- Visibility enhancement under harsh conditions through the scattering media

SoC Design Lab. at Dong-A University

Undergraduate Research Intern

Advisor: Prof. Bongsoon Kang

Busan, Korea
Sep. 2022 — Jul. 2023

- Completed the IDEC SoC Design Course (48 hours, Spring 2023), which initiated my interest in image processing and computational systems.
- Topics covered: Verilog HDL fundamentals, structural and dataflow modeling, and algorithmic-level design.
 - Basic image processing techniques.
 - Principle of machine learning.
 - Programming with C/C++, MATLAB, Python, and Verilog

Awards, Scholarships and Tuition Waivers

2025 18th International Conference on Machine Vision

Paris, France

- Best Poster Presentation Award

Kyushu Institute of Technology

Fukuoka, Japan

- **Waivers from Tuition Fees**

- 2025, 1st semester
- 2024, 1st/2nd semester

Dong-A University

Busan, Korea

- **Academic Excellence Scholarship**

- 2023, 1st/2nd semester
- 2022, 1st semester
- 2021, 2nd semester
- 2018, 2nd semester

- **Advisory Professor Scholarship from Dong-A University**

- 2022, 2nd semester

- **Undergraduate Education Assistant Scholarship from Dong-A University**

- 2023, 1st/2nd semester
- 2022, 2nd semester

Relevant Coursework

Korea OpenCourseWare (KOCW)	Online, Korea
• Digital Image Processing	2025
IC Design Education Center (IDEC)	Online, Korea
• Implementation of CNN's FPGA with Verilog HDL	2024
• Design embedded systems based on FPGA	
• Data structure and algorithm	
• FreeRTOS porting and utilization through Cortex-M processor	
• MIMO - theory and improvement	
• Stereovision for autonomous driving system	2023
• Design digital system utilized Verilog	
• Neural network hardware accelerator "Architecture"	
• DSP with MATLAB	
• Foundation of CUDA-based GPU Programming	
• PLL Design and Jitter Interpretation	2022
• Foundation of reinforcement learning	

Korea Advanced Institute of Science and Technology (KAIST)	Online, Korea
• Microdegree from Graduate School of Data Science	2023

Leadership & Volunteering

Innovation Japan 2025	Tokyo, Japan
<i>Student Staff</i>	Aug. 21 2025 — Aug. 22 2025
Open Campus 2025 (Iizuka Campus, Kyushu Institute of Technology)	Fukuoka, Japan
<i>Student Staff</i>	Jul. 19 2025 — Jul. 20 2025
International Capstone Design Presentation with Partner Universities	Fukuoka, Japan
<i>Participant (Student Delegate)</i>	Jan. 2025
International Joint Research Meeting and Seminar	Kumamoto, Japan
<i>Participant (Student Delegate)</i>	Aug. 9 2024 — Aug. 10 2024
Embedded Systems Lab.	Busan, Korea
<i>Leader</i>	Sep. 2023 — Dec. 2023
• Embedded system design using ATMega128A	
• Embedded system control using the I/O ports and potentiometer	
Donga Challenge	Busan, Korea
<i>Leader</i>	Sep. 2023 — Dec. 2023
• Self-directed learning and project-based teamwork initiative	
• Teaching basic programming (Python) and data analysis using Pandas and NumPy	
Digital System Lab.	Busan, Korea
<i>Leader</i>	Sep. 2023 — Dec. 2023
• Basic programming (C/C++) and embedded system design using ATMega128A	

- Teaching digital logic design and Verilog HDL

Dong-A Ping-Pong Association (DAPPA)
President

Busan, Korea
 Mar. 2021 — Feb. 2022

Military Service

Republic of Korea Army
Sergeant, Active Duty Soldier

Haman-gun, Gyeongsangnam-do, Korea
 Apr. 2019 — Nov. 2020

- Award for Outstanding Army Warrior
- Certificate of Appointment as Squad Leader
- Appointment Certificate as Squad Representative Soldier
- Commendation for Exemplary Soldier
- Award for Outstanding Army Warrior

2020

REFERENCES

Prof. Min-Chul Lee

Associate Professor

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 Graduate School of Computer Science and Systems Engineering
 Kyushu Institute of Technology

Iizuka, Fukuoka, Japan

- E-mail: lee@csn.kyutech.ac.jp
- Scholar Profiles: ORCiD — Google Scholar
- Homepage: 3D Optical Imaging Systems Lab.

Prof. Myungjin Cho

Professor

School of ICT, Robotics and Mechanical Engineering, IITC
 Hankyong National University

Anseong, Kyonggi-do, Korea

- E-mail: mjcho@hknu.ac.kr
- Scholar Profiles: ORCiD — Google Scholar
- Homepage: Computational, Holographic and Optical signal processing (CHO) Lab.

Prof. Bongsoon Kang

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 College of Engineering
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- Scholar Profiles: ORCiD — DBpedia
- Homepage: SoC Design Lab.