CURRICULUM VITAE / RESUME

Jaehyeok Bae

(+82) 10-3939-5098 jhbae110@stanford.edu jaehyeokbae.me

INTERESTS

- Computer vision, Machine learning; Biomedical imaging
- CV/ML applications for medical / industrial / bioinformatics domains

EDUCATION

Stanford University **Sep 2024 - Present**
Ph.D. in Electrical Engineering *Stanford, CA 94305*

Seoul National University **Mar 2016 - Aug 2023***
B.S. in Electrical and Computer Engineering *Seoul, South Korea*

· Graduate Summa cum laude (5^{th} *place / 148*), Total GPA : *4.23 / 4.30* (Major GPA : *4.27 / 4.30*)
* Served mandatory military service between 2018 - 2019

RESEARCH EXPERIENCES

Lab. for Imaging Science and Technology Mar 2023 - Nov 2023
Undergraduate Research Intern (Advisor : Prof. Jongho Lee) *Seoul National University*

· Proposed a novel adaptive selection scheme of sampling-reconstruction pairs for Fourier compressed sensing(CS) by quantifying the high-frequency Bayesian uncertainty of the input. [1]
· Achieved significant improvements on several Fourier CS problems, including Accelerated MRI.

Gauss Labs Inc. Jan 2022 - Nov 2022
Computer Vision Applied Scientist Intern *230 Homer Ave, Palo Alto, CA 94301*

· Proposed a novel anomaly detection and localization algorithm for industrial datasets, by training a normal feature distribution using position and neighborhood information of local features. [2]
· Achieved a state-of-the-art anomaly localization performance on several datasets, including MVTec AD.

Optical Engineering and Quantum Electronics Lab. Mar 2021 - Dec 2021
Undergraduate Research Intern (Advisor : Prof. Byoungho Lee) *Seoul National University*

· Proposed a gaze-contingent augmented reality(AR) rendering system for video see-through display with a focus-tunable lens(FTL), a pupil tracker, and a time-of-flight(ToF) camera.

3D Vision Lab. April 2020 - Mar 2021
Undergraduate Research Intern (Advisor : Prof. Youngmin Kim) *Seoul National University*

· Created N-ImageNet, a large dataset for robust object recognition with event cameras. [3]
· Circuit-level analysis on event camera to investigate noise sources, such as hot pixels and background noises.

PUBLICATIONS

[1] S. Hong, **J. Bae**, J. Lee, and S. Y. Chun, "Adaptive selection of sampling-reconstruction in Fourier compressed sensing," in *Proceedings of The European Conference on Computer Vision (ECCV)*, 2024

[2] **J. Bae**, J. Lee, and S. Kim, "PNI : Industrial anomaly detection using position and neighborhood information," in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2023

[3] J. Kim, **J. Bae**, G. Park, D. Zhang, and Y. Kim, "N-ImageNet: Towards robust, fine-grained object recognition with event cameras," in *Proceedings of the IEEE/CVF International Conference on Computer Vision (ICCV)*, 2021

[4] Y. Park, **J. Bae**, and J. Lee, "Design of a perforated panel for transmission noise reduction," *Transactions of the Korean Society of Mechanical Engineers. A*, 04 2015

SKILLS & LANGUAGES

Programming Languages	Python, MATLAB, C/C++, C#
Libraries/Frameworks	PyTorch, Scikit-learn
Developer Tools	GitHub, VS Code, Jupyter, Google Cloud Platform, Linux, Unity
Simulation Tools	LTspice, Multisim
Languages	English(fluent), Korean(native)

AWARDS AND SCHOLARSHIPS

2nd place in the 2022 SNU FastMRI Challenge, *Seoul National University* 2022
- Proposed an algorithm to restore an aliased image from Accelerated MRI to an aliasing-free image.

Silver Medal in the University Students Mathematics Contest, *Korean Mathematical Society* 2017

Grand Prize in the Korea Youth Science Olympiad (Physics) 2015

Gold Medal in the Korea Youth Science Olympiad (Mathematics) 2015

Presidential Science Scholarship, *Korea Student Aid Foundation (KOSAF)* 2016 - 2021
- 4-year Full tuition and additional stipends (*$5,000 / year*) for academic excellence.

TEACHING AND VOLUNTEERING EXPERIENCES

Contest Coordinator

Organized and supervised the 2023 SNU FastMRI Challenge, *Seoul National University* 2023
- Designed the task of challenge, and evaluated the models proposed by participants.

Undergraduate Student Tutor, *Seoul National University*

Introduction to Random Variables and Random Processes	Spring 2023
Introduction to Communications	Fall 2021
Introduction to Algorithms	Spring 2021, Fall 2022
Foundation of Physics 1 & 2	2017, 2020

Mentoring

International Students Integrated Peer Tutoring Program, *Seoul National University* Fall 2021

University Student's Talent Donation Camp, *Korea Student Aid Foundation* 2016, 2017
- Taught basics of mathematics and physics to underprivileged students.

EXTRACURRICULAR ACTIVITIES

SNU Tomorrow's Edge Membership(STEM) Mar 2021 - Aug 2022
12^{th} Vice Chairman of SNU Honor Society *College of Engineering, Seoul National University*

- A student organization that presents a vision of "Outstanding engineering knowledge, broad consideration of different perspectives, and active communication with society."
- Served as a leader of 200+ STEM members, encouraged activities; interdisciplinary academic seminars, and mentoring programs for teenagers.
- Wrote a book for raising scholarships to future engineers: *Wanna be Engineer*, Megastudy-books, 2021.

Republic of Korea Army Jan 2018 - Sep 2019
Soldier of Information Security Specialist *Gyeryong, Republic of Korea*

- Completed mandatory military service (honorable discharge)
- Information protection tasks to prevent computer viruses and hacking at the Army headquarters.