CURRICULUM VITAE / RESUME
Jaehyeok Bae

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INTERESTS

- Computer vision for biomedical imaging
- Physics-based deep learning for clinical applications

EDUCATION

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

· Graduate Summa cum laude (5th *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 - Present
Research Intern (Advisor : Prof. Jongho Lee)   *Seoul National University*

· Proposed a novel mean-squared error estimator in the frequency domain to generate an optimal sampling mask in Accelerated MRI.
· Theoretically and experimentally showed that constructing patient-specific adaptive sampling-reconstruction pairs, namely *adaptive selection*, is better than the conventional non-adaptive sampling method. [1]

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

· Improved an unsupervised anomaly detection algorithm on CD-SEM Images.
· Achieved a state-of-the-art anomaly localization performance on industrial datasets. [2]

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

· Created N-ImageNet, a large dataset for robust object recognition with event cameras. [3]
· Verified that pretraining on N-ImageNet improves the performance of event-based classifiers.

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 IEEE / CVF Computer Vision and Pattern Recognition Conference (CVPR)*, 2024 (under review)

[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 (*$4,000 / 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 Teaching Assistant, *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
12th 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 seminar and mentoring program for teenagers.
· Wrote a book for future engineers and raising scholarship: *Wanna be Engineer*, Megastudy-books, 2021. (ISBN: 9791129708168, [book])

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.