Curriculum Vitae

Byeonghyun Pak

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Education

Daegu Gyeongbuk Institute of Science and Technology (DGIST) Feb 2019 – Feb 2023
B.S. in Engineering (Interdisciplinary Program) *Daegu, South Korea*
- Concentration in Computer Science & Engineering

University of California, Berkeley (UCB) Jul 2019 – Aug 2019
Visiting Student (Freshman Global Leadership Program) *Berkeley, CA, USA*

Publications

*: Equal Contribution, C: Conference, P: Preprint

[P1] **Aligning Forest and Trees in Images and Long Captions for Cross-Domain Grounding**
Byeongju Woo, Zilin Wang, ***Byeonghyun Pak***, Sangwoo Mo, Stella X. Yu
Under review, 2025.

[C3] **Tortoise and Hare Guidance: Accelerating Diffusion Model Inference with Multirate Integration**
Yunghee Lee, ***Byeonghyun Pak***, Junwha Hong, Hoseong Kim
Neural Information Processing Systems (**NeurIPS**), 2025. [link]

[C2] **Textual Query-Driven Mask Transformer for Domain Generalized Segmentation**
Byeonghyun Pak*, Byeongju Woo*, Sunghwan Kim*, Dae-hwan Kim, Hoseong Kim
European Conference on Computer Vision (**ECCV**), 2024. [link]

[C1] **B-spline Texture Coefficients Estimator for Screen Content Image Super-Resolution**
Byeonghyun Pak*, Jaewon Lee*, Kyong Hwan Jin **Highlight paper (top 2.5%)**
Computer Vision and Pattern Recognition (**CVPR**), 2023. [link]

Experience

Republic of Korea Army Mar 2023 – Present
First Lieutenant (attached to Agency for Defense Development) *Daejeon, South Korea*
- Selected as one of 20 research officers nationwide dedicated to STEM research for national defense

Agency for Defense Development Mar 2023 – Present
Research Officer for National Defense *Daejeon, South Korea*
- *Project: Synthetic-to-Real Domain Generalization for Military Object Detection*
  - Researched domain generalization for reliable infrared imagery object detection in data-scarce settings
  - Improved synthetic-to-real robustness by integrating pre-trained **vision–language models (VLMs)**
  - 1 publication in ECCV 2024 [project page]
- *Project: Synthetic Dataset Generation for Air Defense System*
  - Constructed synthetic datasets for rare/low-visibility targets via **image/video diffusion models**
  - Accelerated the generation pipeline by ≈**30%** with a multi-rate integration method
  - 1 publication in NeurIPS 2025 [project page]

Image Processing Laboratory @ DGIST Dec 2021 – Feb 2023
Undergraduate Research Intern (advisor: Prof. Kyong Hwan Jin) Daegu, South Korea

- Researched **implicit neural representations (INRs)** for solving inverse problems (e.g., super-resolution)
- *Project: Image Super-resolution for Screen-Content Images*
  - Developed a **B-spline INR method for super-resolution** specialized for screen content images
  - 1 publication in CVPR 2023 (selected as highlight paper) [project page]

Honor & Awards

FriendliAI LLM Hackathon, Grand Prize May 2024
- *Project: Knowledge graph-based RAG system for scalable retrieval of academic papers*

Korea National Scholarship of Excellence in Science and Technology Mar 2021 – Feb 2023
- Full-ride scholarship for selected research officers in defense science and technology

Korea National Scholarship for Undergraduate Study Mar 2019 – Feb 2023
- National full-tuition scholarship with stipend

Korea Military Academy Superintendent's Award Dec 2021
- Award for Excellence in national defense research projects
- *Project: Development of object-tracking models for defense systems*

Patents

***B. Pak** et al.*, System for B-Spline Texture Coefficient Estimation and Method for Generating High-Resolution Images Using the Same. **KR 10-2730236** (reg. 2024.11.11).

Academic Services

Conference Reviewer
- Neural Information Processing Systems (**NeurIPS**) 2025
- Computer Vision and Pattern Recognition (**CVPR**) 2026

Skills

- **Programming Languages:** Python, C/C++, JavaScript, MATLAB
- **Frameworks & Tools:** PyTorch, TensorFlow, Docker, Git, OpenCV, OpenGL, Open3D, ManiSkill
- **Languages :** Korean (native), English (fluent, TOEFL iBT 106)