# Curriculum Vitae


# Byeonghyun Pak

**Email:** byeonghyun.pak@gmail.com **Website:** byeonghyunpak.github.io


## 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 at* International Conference on Learning Representations (**ICLR**), 2026

[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

[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

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

## Work/Research Experience

**Republic of Korea Army (ROKA)** 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
- Planned and executed EO/IR field data collections enabling reliable IR detection evaluation

**Agency for Defense Development** Mar 2023 – Present
*Research Officer for National Defense (ROND)* *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 novel 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

**Korea National Scholarship of Excellence in Science and Technology** Mar 2021 – Feb 2023
- National selection: 1 of 20 Research Officers nationwide (1 of 4 in CSE) for defense STEM research

**Korea National Scholarship for Undergraduate Study** Mar 2019 – Feb 2023
- Received national scholarship includes full tuition and stipend

**Korea Military Academy Superintendent's Award** Dec 2021
- Award for Excellence in National Defense Research Projects
- *Topic: A Study on the Application of Attention Module for Object Tracking Performance Improvement*

**1st Place—FriendliAI LLM Hackathon** May 2024
- *Topic: Knowledge Graph-based RAG (Retrieval-Augmented Generation) model*

## 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, NumPy, Docker, Git, OpenCV, OpenGL, Open3D, ManiSkill