Gihwan (Finn) Jung

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OBJECTIVE

- Seeking **Summer 2026 Research** internship in Computer Vision and Machine Learning. Hands-on experience in vision-based wildfire detection and image processing research, with a strong focus on model evaluation, dataset design, and empirical analysis for real-world deployment.

EDUCATION

Saint Louis University, Saint Louis, MO (Anticipated May, 2027) Aug, 2022 - (Anticipated) May 2027

- Bachelor of Science in **Computer Science (GPA 4.0/4.0)**
- **Relevant Coursework:** Data Structures, Algorithms, Object-Oriented Software Design, Principles of Computing Systems, Computer Organization and Systems, Foundations of Statistics, Calculus I–III, Discrete Mathematics.
- **In Progress:** Machine Learning, Computer Vision, Programming Languages, Principles of Mathematics, Optimization and Linear Algebra for Computation.

RESEARCH EXPERIENCE

VAI Lab, Sejong University May, 2025 - Present

Seoul, South Korea | *Undergraduate Research* | *Advisor: Byungseok Min, Ph. D, Tae-hyuk Ahn, Ph. D*

- Developed a two-stage wildfire detection framework integrating detection and classification, **improving recall and mAP by 3%** on small objects. Lead researcher of a manuscript in preparation.
- designed and optimized the data preprocessing and evaluation pipeline and conducted comprehensive experiments and literature review.

HPC Lab, Saint Louis University Oct, 2022 - Present

St. Louis, MO | *Undergraduate Research* | *Advisor: Tae-hyuk Ahn, Ph. D*

- Built a Linux-based benchmarking pipeline to evaluate multiple blood microbiome analysis tools; **co-authored the resulting paper as 3rd author**.
- Performed literature synthesis and assisted in drafting the introduction for a blood microbiome research project.

PUBLICATIONS

- **Gihwan Jung**, Byungseok Min, Tae-Hyuk Ahn, (2025) *Enhancing Fire and Smoke Detection in Adverse Weather via Two-Stage Image Preprocessing* (Manuscript in preparation; tentative title).
- Jammi Prasanthi Sirasani, Cory Gardner, **Gihwan Jung**, Hyunju Lee, and Tae-Hyuk Ahn, (2024) *Bioinformatics protocol of blood microbiome analyses: perspective and challenges* (Briefings in Bioinformatics)

TECHNICAL PROJECTS

Hackathon (Hack SLU) March, 2025

St. Louis, MO | Team Leader, Award Winner

- Delivered a **full-stack ML solution**: ResNet-18 transfer-learned on 90k+ ASL images (29 classes) and integrated into a desktop application with live webcam inference and quiz features using **PyTorch**
- Unified model understanding with production needs—profiling/optimizing inference, designing a stable API layer, and embedding the classifier into an interactive desktop workflow.

CV Zebrafish (Capstone Project) August, 2025 - Present

St. Louis, MO | Student Developer

- Developed **computer vision pipeline** for analyzing zebrafish movement tracking data from DeepLabCut pose estimation system, processing multi-point skeletal coordinate data across thousands of video frames
- Designed modular calculation engine with vectorized **NumPy** operations for efficient processing of time-series pose data, achieving <3 second computation on **10,000-frame datasets**

Hackathon (Hack WashU) October, 2025

St. Louis, MO | Team Leader

- Trained and deployed dual **deep learning models** for 8-class medical wound classification, achieving real-time inference on **13,000+** annotated images using transfer learning and data augmentation pipelines.
- Architected production REST API with Flask for model serving, implementing model hot-swapping, CUDA/CPU auto-detection, and multi-threaded data loading for scalable deployment in healthcare cost transparency application.

Advanced Facial Emotion Recognition System Jun, 2024

- Designed and trained a **PyTorch deep learning** model to classify images of faces into seven distinct emotions, leveraging MobileNet V2 for efficient transfer learning.
- Created and implemented a dataset of **35,000+** images through a comprehensive data preprocessing pipeline, including image loading, resizing, and normalization.

Wine Classification Using Neural Networks Dec, 2023

- Designed a **PyTorch** feedforward **neural network model** that can classify three distinct wine types with two hidden layers, incorporating dropout layers for regularization and batch normalization to stabilize learning.
- Achieved **92%** accuracy through precise predictions by developing a custom training and testing pipeline using technologies like NumPy, and Pandas.

Segment Display Interpreter Oct, 2023

- Developed a system for detecting and recognizing digits from images of seven-segment displays using **OpenCV** and **Python**, focusing on **image preprocessing**, **contour detection**, and **object recognition techniques**.

SKILLS & Technologies

- Programming: **Python** (advanced), C++ (Intermediate), Bash
- ML & Computer Vision: **PyTorch**, **OpenCV**, transfer learning, object detection, data processing
- Data & Scientific Computing: **NumPy**, Pandas, time-series analysis, kinematic/biomechanical modeling
- Tools & Systems: Git, Linux, SLURM-based HPC clusters.

HONORS & AWARDS

- **Full Merit-Based Scholarship (~$70,000/year)** — Saint Louis University
  - **SLU Leadership and Service Award**
  - **SLU Vice President Tuition Scholarship**
  - **J.K. Huh Foundation Tuition Scholarship** (+Room and Board)
- **Dean's List (All eligible terms)** — Saint Louis University
- **Top Team, Beginner Track** — HackSLU Health Hackathon, Mar 2025
- **Army Commendation Medal** — U.S. Army, Jan 2025

LEADERSHIP

U.S. Army, Sergeant Jul, 2023 - Jan, 2025

Non-Commissioned Officer In Charge (KATUSA, Korean Augmentation to the United States Army)

- **Supervised 40+ soldiers**, facilitating communication and workflow between U.S. and Korean forces to ensure seamless operations and collaboration. Recognized for exemplary service with the **Army Commendation Medal**.

Community Engagement

Super Computing (SC) 25 November, 2025

St. Louis, MO | Student Attendee

- Attended tutorials and technical sessions on high-performance computing, GPU-accelerated ML, and cluster management, exploring how to apply HPC methods to my wildfire detection research

KICS AI Short Course August, 2025

Seoul, South Korea | Student Attendee

- Completed an intensive short course on *artificial intelligence and machine learning*, studying probabilistic modeling, neural networks, and practical AI applications