Daniel Kim

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EDUCATION

Rice University **4.0/4.0**

Bachelor of Science in Electrical and Computer Engineering August 2024 – May 2028

- **Awards:** Max Roy Scholarship (1 recipient, full tuition, merit-based)
  Los Alamos National Lab Gold Scholarship (3 recipients, $20,000, merit & service-based)
  Walsh Engineering Award (~10 recipients, by GPA)
- **Coursework:** Computer Vision, Data Structures & Algorithms, Signals & Systems, Algorithmic Robotics, Linear Algebra

SKILLS

Languages: Python (*PyTorch, OpenCV, PySpark*), C++ (*OpenGL, ImGui, GTSAM*), Java, Dart, TypeScript, SQL, Verilog

AI/ML & Robotics: ROS2, SLAM, RL (*OpenAI Gym*), Isaac Sim, implicit neural representations (INRs), generative models (*diffusion, VAEs*)

Infrastructure & Data: Google Cloud, AWS, Docker, Firebase, REST APIs, CI/CD, Spark/Hadoop

EXPERIENCE

Carnegie Mellon University AirLab **Pittsburgh, PA**

Robotics Institute Summer Scholar March 2026 – Present

- Extending a LiDAR odometry system with multimodal sensor fusion to improve localization robustness for robotic navigation.
- Developing and benchmarking differentiable and RL-based navigation policies (PPO, SHAC) for drones in Isaac Sim.

Rice Computational Imaging Lab **Houston, TX**

Undergraduate Research Assistant August 2025 – Present

- Co-developed a data-free INR pretraining method, boosting PSNR by 25 dB and doubling convergence. Accepted CVPR 2026.
- Extended a meta-learned INR framework for organ segmentation, using 90% fewer parameters than U-Net baselines.

NASA Kennedy Space Center **Cape Canaveral, FL**

Robotics Software Engineering Intern May 2025 – August 2025

- Created a neural-PID controller for a robotic rocket tracking system, reducing tracking error by 74% and deployed on Artemis II.
- Optimized ROS pipeline latency via multithreading and GPU offloading, improving throughput by 30%.

Los Alamos National Laboratory **Los Alamos, NM**

Hardware Engineering Intern June 2023 – August 2024

- Built an FPGA-based simulator to test closed-loop radio frequency control systems without physical hardware.
- Designed a robust control algorithm on an FPGA to automate tuning of 52 feedback controllers, replacing a manual calibration process.

PUBLICATIONS

- Vyas, K., **Kim, D**., Netherton, T., Veeraraghavan, A., & Balakrishnan, G. (2026). *FPGL: A Meta-Learned Implicit Neural Representation Framework for Medical Image Segmentation.* Submitted to Medical Image Analysis.
- Vyas, K., Kayabasi, A., **Kim, D**., Saragadam, V., Veeraraghavan, A., & Balakrishnan, G. (2026). *The Surprising Effectiveness of Noise Pretraining for Implicit Neural Representations*. Accepted to IEEE/CVF CVPR 2026.

PROJECTS

Ember: Differentiable rocket simulator for learned flight control (PyTorch, KiCad) May 2026 – Present

- Developing a differentiable 6-DOF flight simulator in PyTorch to train model rocket navigation policies.
- Engineering the full stack, from a batched GPU rollout engine to a custom flight computer, for zero-shot sim-to-real deployment.

Alpine: Open-source PyTorch library for implicit neural representations (Python, PyTorch) 2025 – Present

- Core contributor to Alpine, a research library for implicit neural representations; redesigned the feature-extraction pipeline into a modular abstraction over PyTorch forward hooks for safe access to intermediate activations.
- Architected an automated regression-testing framework for model definitions, enabling fast, reproducible prototyping of new INR architectures.

OceanAI: Underwater vehicle and computer vision for mapping ocean trash (C++, TypeScript, Python, KiCAD) June 2022 – May 2023

- Developed an autonomous underwater vehicle to capture subsea footage and process it with YOLOv5-based object detection.
- Implemented deep learning and SLAM-based mapping to discover 174,000+ pieces of ocean trash, winning Regeneron ISEF 3rd place.