

Daeyoung Kim

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About

I am an EECS undergraduate at UC Berkeley with a prior career as a professional analog artist (watercolor, oil, acrylic, graphite). My interests lie at the intersection of computer graphics and human computer interaction, where I design and build artist centered tools and visual simulations. Recent work includes a real time digital watercolor system in Godot that models water flow, pigment diffusion, and optical glazing from an artist's perspective. Long term, I aim to pursue a Ph.D. in computer science focused on creativity support tools, interactive rendering, and interfaces that make visual creation more expressive and accessible.

Education

B.S. Electrical Engineering & Computer Sciences (EECS) Aug 2023 – Expected May 2026
University of California, Berkeley — Berkeley, CA

- GPA: 3.72 / 4.00
- Focus: computer graphics, human computer interaction, and visual computing
- Selected coursework: Data Structures & Algorithms, Discrete Mathematics, Probability, Computer Architecture, Computer Security, Computer Networks, Artificial Intelligence

Lower Division Computer Science (UC Transfer Preparation) Jan 2021 – May 2023
Berkeley City College — Berkeley, CA

- GPA: 4.00 / 4.00
- Completed all lower division CS and math requirements for UC transfer
- Selected coursework: Data Structures & Algorithms, Multivariable Calculus, Linear Algebra, Differential Equations, Introductory Programming, Physics I-II, General Chemistry
- Math & CS Tutor (18 months): supported students in programming, calculus, and linear algebra

Projects

Digital Watercolor Painting Simulator — Godot, GLSL, GPU Physics 2025 – Present

- Built a GPU accelerated watercolor painting application in Godot Engine 4.4 that simulates realistic water flow, pigment diffusion, evaporation, and deposition in real time on a 256×256 canvas
- Implemented the physics pipeline entirely on the GPU using GLSL compute shaders and Godot's RenderingDevice API with double buffered textures for water, mobile pigment, and static pigment
- Developed a pressure sensitive brush system supporting tablet input with stroke interpolation, masking, and batched GPU uploads to minimize CPU-GPU transfer overhead
- Modeled optical color mixing using Beer-Lambert absorption for realistic glazing and wet in wet behavior, including pigment lifting with wet before dry priority
- Wrote a research style technical paper describing the simulation design and planned evaluation; links: [GitHub](#) | [project page](#) | [paper \(PDF\)](#) | [demo video](#)

Stock Market Prediction Prototype — Python, PyTorch, pandas, NumPy, SQL 2024 – Present

- Investigate short and long term stock price behavior using machine learning models informed by linear algebra concepts (SVD, PCA) studied in coursework

- Implemented LSTM based sequence models for short horizon prediction on historical time series data, producing meaningful predictive signals beyond naive baselines
- Currently developing feedforward neural network models for longer horizon behavior, with data pipelines built using pandas/NumPy and SQL for data ingestion and preprocessing
- Use the project as a sandbox for model evaluation, hyperparameter tuning, and comparative analysis of time series representations

Get Fit or Quit — CalHacks Game Project — Python, Pygame

2022

- Co-developed an arcade style game where the player catches healthy foods and avoids junk food to maintain a fitness level over 60 seconds
- Implemented core gameplay loop, collision handling, and difficulty ramp with multiple phases as object spawn rates increase over time
- Designed dynamic feedback: character size changes with fitness level to provide immediate visual indication of player state
- Packaged the game with a simple installation flow (`requirements.txt`, `main.py`) for easy distribution; repository: github.com/Dubu911/Get_fit_or_quit

Experience

Computer Science Tutor — Berkeley City College, Berkeley, CA

Sep 2025 – Present

- Tutor students across all computer science courses through the Learning Resources Center
- Give short, targeted mini lectures on core CS concepts (data structures & algorithms, x86 assembly, computer organization)
- Guide students on assignments by focusing on problem decomposition, debugging strategies, and conceptual understanding

Math Tutor — Laney College Math Lab, Oakland, CA

Aug 2022 – May 2023

- Provide in person and online tutoring for students across the Peralta district, from Algebra through Calculus III
- Support 3–4 tutors in a shared lab environment, helping students with both conceptual understanding and homework
- Adapt explanations to diverse backgrounds and levels of preparation

Embedded Computer Science Tutor — Berkeley City College, Berkeley, CA

Aug 2022 – May 2023

- Embedded tutor for an introductory computer science course with Prof. Benjamin Allen
- Help students develop algorithmic thinking rather than giving direct solutions, guide them through debugging and problem decomposition
- Provide both in class and outside of class support for students struggling with core CS concepts

Sub Engineer, Semiconductor Equipment — Samsung Plant, Xi'an, China

Feb 2017 – Feb 2019

- Worked on installation and removal of semiconductor manufacturing equipment in a clean room environment
- Collaborated with a team of ~10 engineers and 30 local staff, supported technical communication as my Chinese improved
- Gained exposure to fabrication processes and high reliability industrial workflows

Sales Manager — Infeed Corp (Coperion K-Tron Sole Agent), Korea

Jan 2016 – Jan 2017

- Managed client relationships for high precision industrial feeders in chemical, plastics, and food industries
- Recommended appropriate feeder configurations based on process requirements and constraints

<ul style="list-style-type: none"> Handled invoicing, troubleshooting, and coordination with technical teams 	
Logistics Staff — DB Schenker, Korea	Jan 2015 – Dec 2015
<ul style="list-style-type: none"> Tracked inbound and outbound semiconductor equipment parts in a specialized warehouse Used SAP and Excel to maintain inventory accuracy and shipment records Developed attention to detail working with sensitive, high value components 	
Engineer (Alternative Military Service) — Dyne Electricity, Korea	Jan 2012 – Oct 2014
<ul style="list-style-type: none"> Repaired industrial water pumps for customers, combining electrical and mechanical diagnostics Communicated directly with clients about issues, repair status, and preventive maintenance Completed 34 months of government approved industrial service in lieu of military duty 	
Main Art Instructor — Mokwoo Art Institution, Korea	Mar 2009 – Dec 2010
<ul style="list-style-type: none"> Led a class of ~50 high school students preparing for competitive entrance exams to art universities Designed and ran 5 hour studio “demo tests” simulating real exam conditions, provided detailed feedback on drawing and composition Balanced technical instruction with emotional support, building student confidence and improving outcomes 	

Skills

Programming: Python, C/C++, Java, GDScript, GLSL (compute shaders), Bash

Architecture & Assembly: x86, RISC-V

Libraries & Tools: PyTorch, pandas, NumPy, SQL, Godot Engine 4, Pygame, Git, Linux

Graphics & Simulation: GPU programming (Godot RenderingDevice, compute shaders), real-time physics simulation, optical color mixing (Beer–Lambert), interactive tool design

Machine Learning & Data: Time series modeling (LSTM, feedforward networks), data preprocessing and analysis, dimensionality reduction (PCA, SVD concepts)

Mathematics: Linear algebra, multivariable calculus, differential equations, probability & statistics

Art & Design: Traditional watercolor, oil, acrylic, graphite; art instruction; visual composition and critique