Youngjae (Jimmy) Sim

jimmy-sim.github.io | simj@berkeley.edu | linkedin.com/in/jimmy-sim | github.com/Jimmy-Sim

Education

University of California, Berkeley — Berkeley, CA
B.A. Applied Mathematics, B.A. Computer Science — Aug. 2026 – May 2029

- **Relevant Coursework:** Multivariable Calculus, Discrete Mathematics, Structure and Interpretation of Computer Programs, Introduction to Quantitative Finance, Poker Theory & Fundamentals
- **Relevant Involvement:** Capital Investments at Berkeley (Quant Education), Berkeley Math Tournament (Problem Writer), Poker@Berkeley, Quiz Bowl, Real Estate Club
- **Competitions:** Berkeley Trading Invitational 2026, Citadel Securities Trading Challenge, Jane Street Guts++

Korea International School — Seongnam, South Korea
High School Diploma (GPA: 3.95/4.0, SAT: 1560) — Aug. 2022 – May 2026

Research & Technical Experience

Presolve for Conic Quadratic Optimization — Berkeley, CA
Undergraduate Contributor | Rust | Mentor: Matteo Santamaria (PhD Student) — Sep. 2026 – Present

- Contribute to a Rust library implementing presolve reductions for conic quadratic programs, aimed at reducing problem size and computational cost before solving.
- Construct and test optimization instances to trace fixed-variable elimination, conversion of constraints into variable bounds, infeasibility detection, and solution recovery.
- Author mdBook documentation explaining the mathematical reasoning behind presolve rules and their implementation in Rust.

Stock Price Prediction: Comparative Deep Learning Study — Remote
Independent Project | Python, TensorFlow/Keras — May 2025 – Sep. 2025

- Implemented four-layer RNN and LSTM models and a custom KL-regularized latent-variable forecaster in TensorFlow/Keras to predict next-day stock opening prices from 40-day windows.
- Benchmarked models on 5 years of stock data using an 80/20 train/test split and training-only min-max scaling, achieving up to 62% lower RMSE than a vanilla RNN.

Science Internship Program (SIP), UC Santa Cruz — Santa Cruz, CA
Research Intern | Haskell | Mentor: Prinyaka Mondal (PhD Candidate) — Jun. 2024 – Aug. 2024

- Co-developed a Haskell API using HasChor's choreographic programming model, composing compare/select operations to implement a two-of-three majority quorum across replicated services.
- Demonstrated quorum behavior with one client and three replicas in four terminals, covering unanimous agreement, majority agreement despite conflicting responses, and explicit failure when no majority existed.

Pothole Detection with Image Deblurring and Embedded Deployment — Remote
Independent Researcher | Published, Journal of Student Research, Vol. 14 (2025) — Apr. 2024 – Oct. 2024

- Trained an encoder-decoder image-deblurring network using L1 and VGG19 perceptual losses, improving YOLOv5 average precision on blurred images from 54.7 to 60.1 (+5.4 AP points).
- Deployed the detection pipeline on an NVIDIA Jetson board for real-time, camera-based pothole detection.

Leadership

Competitive Programming & Computer Programming Clubs – President — Aug. 2022 – May 2026

- Coached 40+ members in competitive programming algorithms and C++ for USACO and ACSL contests.
- Organized the International School Programming Cup (60+ participants, 5 schools) and directed SoriHack, a school-wide hackathon where participants composed music using generative AI.

Quiz Bowl – Team Captain — Oct. 2023 – May 2026

- Led team to 1st place at the KAIAC national championship and 2nd place out of 24 teams at the 2026 HS Quiz Bowl Asian Championships in Singapore

Awards & Honors

2x AIME Qualifier (2023, 2024) · **Gold Division**, USA Computing Olympiad (USACO, 2024) · **3rd Place**, Korea Youth Investment Competition (2024) · **Gold Medal**, Korea Science & Engineering Fair (2024) · **Gold Medal**, International Greenwich Olympiad (2024) · **Selected Presenter**, IEEE ISEC, Princeton University (2025) · **Commended Poet**, Foyle Young Poets of the Year Award (top 85 of 28,000+, 2025)

Skills & Interests

Languages: Python, C++, Rust, Haskell | **Libraries/Frameworks:** NumPy, pandas, scikit-learn, TensorFlow/Keras
Interests: Quiz Bowl, Film/Cinema, Poker, Reading (classics, philosophy, nonfiction), Prediction Markets