Andrew Kim

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Education

University of Pennsylvania — Philadelphia, PA
Bachelor of Science in Engineering, Computer Science — *Aug 2025 - May 2029*

Experience

Research Intern | Software Engineer — Summer 2024, Summer 2025
U.S. Naval Research Laboratory — *Washington, D.C.*

- Developed CrystalEyes, an image analysis platform for classifying and quantifying microscopic ice crystals
- Awarded competitive apprenticeship and stipend and completed two full-time, on-site research terms
- Implemented crystal segmentation piplines using Cellpose and OpenCV to extract morphometric data
- Autoamted previously manual workflows, reducing processing time by 95%
- Built interactive GUI with Tkinter and Matplotlib, enabling users to preview, analyze, and export extracted data
- Developed custom binary file parser to extract JPEGs and experiment metadata from proprietary instrument formats

Machine Learning Engineer — Jun 2023 - May 2024
Water Quality Prediction Research — *Fairfax, VA*

- Designed and trained supervised learning models to predict Biochemical Oxygen Demand with satellite data
- Built a Deep Neural Network with TensorFlow to achieve a proportional RMSE of 0.025
- Determined features collected through satellite imagery for predicting in-situ BOD measurements
- State Winner of U.S. Stockholm Junior Water Prize, 1st and 2nd at Regional and State science fairs, respectively

Frontend Engineer — Sep 2022 - May 2023
Samsung Solve for Tomorrow Challenge — *Fairfax, VA*

- Developed InvasiGo, a full-stack web application enabling community-driven tracking of invasive plant species
- Built responsible, mobile-friendly UI using HTML, CSS, and JavaScript with REST API integration
- Integrated a machine learning plant identification service to classify images uploaded by users
- Awarded $14,500 state winner prize and qualified for U.S. National Competition

Projects

woodsonscioly.org | *TypeScript, JavaScript, React, Sass, Node.js* — Aug 2024 - June 2025

- Developed official C. G. Woodson Science Olympiad team website, reached 7.8k impressions
- Implemented modular React components for event listings, team bios, and competition results
- Created custom Markdown parser to automate blog post rendering

wso-code | *Python, NumPy, Pandas, API Ninja* — May 2018 – May 2020

- Created cryptography tools to generate mathematical, Morse, and polyalphabetic ciphers
- Developed automated test generation scripts leveraging API Ninja's quote database
- Generated hundreds of practice tests, improving team performance to win 9 medals, including 3 first place medals

Publications

American Chemical Society: Optimization of the Gold Nanoparticle Colorimetric Assay for Screening and Quantifying Ice Recrystallization Inhibition Activity of Antifreeze Proteins (2025)
Institute of Electrical and Electronics Engineers: Utilizing Remote Sensing and Deep Neural Networks to Predict Biochemical Oxygen Demand in the Chesapeake Bay (2024)

Technical Skills

Languages: Python, Java, TypeScript, HTML, CSS/Sass, Bootstrap, LaTeX
Frameworks and Libraries: React, Node.js, NumPy, Matplotlib, Pandas, OpenCV, TensorFlow
Developer Tools: Git, Windows Terminal, VS Code, Visual Studio, PyCharm, IntelliJ, WebStorm