ERIK NGUYEN

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EDUCATION

University of California, San Diego — La Jolla, CA
M.S. in Computer Science — *Sep 2024 - Present*
- **GPA: 4.00/4.00**, Expected Grad Date: *Dec 2025*
- ML Learning Algorithms, Recommender Systems, Probabilistic Reason & Learning, Medical Image Computing, Algorithm Design, AI for Music, Networked Services

California State University, Fullerton — Fullerton, CA
B.S. in Computer Science — *Aug 2022 - Aug 2024*
- **GPA: 3.94/4.00**, Graduated with Summa Cum Laude Honors
- Discrete Mathematics, Computer Communications, Artificial Intelligence, Machine Learning, Databases, Computational Bioinformatics, Algorithms, Data Structures, Operating Systems

SKILLS

Programming: Java, Python, C/C++, Go, C#, Javascript, Lua, HTML, LaTeX
Tools & Applications: Android Studio, VS Code, Docker, SQLite, PostgreSQL, Git/GitHub, Unit Testing, Excel
Frameworks & Libraries: PyTorch, TensorFlow, FastAPI, Flask, React, Pandas, NumPy, Scikit-Learn

EXPERIENCE

Thales Avionics, INC — Irvine, CA
Software Engineer-AI Intern — *Jul 2024 - Oct 2024*
- Led the research and evaluation of a new internal Thales **LLM**, assessing its adoption potential among **30+** current software engineers. Compiled findings into a technical report and delivered **3** presentations to key stakeholders.
- Developed and executed over **150 JUnit** & **Mockito** test cases on the Android platform, ensuring full **JaCoCo** compliance for quality assurance.

CEDDI Lab — Fullerton, CA
Researcher — *Feb 2024 – Sep 2024*
- Designed and evaluated a fair and transparent facial beauty prediction pipeline using **XGBoost**, **SVR**, and **GNN** models with landmark-based feature engineering and bias mitigation strategy.
- Co-authored a paper on bias-aware ML for facial image analysis, leading the experiments and manuscript writing.

Khoi Turner, INC — San Clemente, CA
Software Engineering Intern — *Aug 2023 - Nov 2023*
- Developed firmware and communication protocols between a **Particle IoT microcontroller** and main controller to enable customer interaction via the **Blynk** web interface for cellular-connected water dispensers.

ASSURE-US Research Fellowship, CSUF — Fullerton, CA
Researcher — *May 2023 - Jul 2023*
- Built a phenological model for cherry blossom bloom date predictions across Japan. Presented findings at **SIGKDD'2023** Conference for the SoCal Data Science Day track.
- Developed a model predicting student dropout/graduation with **89%** accuracy using academic and socioeconomic factors. Presented at **SCCUR'2023** and **NCUR'2024** Conferences.

PUBLICATIONS

Regression Guided Strategy to Automated Facial Beauty Optimization through Image Synthesis
Erik Nguyen and Spencer Htin
  arXiv preprint arXiv:2501.00811, 2025

Racially Inclusive Approach to Facial Beauty Modeling Using Machine Learning
Erik Nguyen, Sampson Akwafuo, Doina Bein, and Blessing Ojeme
  Proceedings of the 2024 IEEE International Conference on Bioinformatics and Biomedicine (BIBM), pages 4467–4473. IEEE, 2024

PROJECTS

ScholarScope | *AI Agent & Tooling* *Aug 2025*
- Designed a custom **MCP server** using **FastMCP** to provide **LLMs** with advanced academic research capabilities, including keyword, author, and institution search, citation exploration, and full-text retrieval.
- Implemented a **ReAct Agent** using **LangGraph** that orchestrates MCP tools, enabling seamless agentic workflows and configurable integration of additional MCP servers.

Tversky Neural Networks | *Deep Learning Research Implementation* *Aug 2025*
- Implemented the **Tversky Similarity** and **Tversky Projection** layers in **PyTorch**, translating the mathematical formulations from the paper *Tversky Neural Networks: Psychologically Plausible Deep Learning with Differentiable Tversky Similarity*.
- Benchmarked across multiple image classifier backbones (**ResNet**, **EfficientNet**, etc.), replacing standard classifier heads with the Tversky projection layer to evaluate against reported experimental results.

Bloomscape Japan | *Full Stack AI Web Application* *Jun 2025*
- Designed an AI-powered cherry blossom full-bloom prediction platform for 100+ Japanese cities, using **React** for the frontend and **FastAPI** for the backend API service.
- Engineered a **LightGBM**-based forecasting model with spatio-temporal feature engineering, automatically retrained via scheduled **cron jobs** to deliver accurate real-time predictions.
- Optimized query performance for date lookups with **Redis** caching and a **SQLite** database for persistent storage.
- Containerized the entire stack using **Docker Compose** for seamless local development and cloud deployment.

Pintrigue | *Full Stack Web Application* *Jul 2025*
- Developed an Instagram-like social media platform for sharing geotagged photos and exploring pins via an interactive map, using a **FastAPI** backend, **React** frontend, and **Docker Compose** for full-stack containerization.
- Integrated **PostgreSQL** with a **geohash-based index** to enable fast, proximity-based querying and map-based content filtering.
- Architected a secure authentication system with **JWT access** and **refresh tokens**, supporting seamless session management and token renewal.

TuneStacker | *Native Android Application* *Jan 2023*
- Built a native Android music app from scratch using **Java**, enhancing performance, maintainability, and modern UI/UX design.
- Integrated **yt-dlp** to enable users to download and play audio from YouTube and other supported platforms directly within the app.
- Implemented robust local playback, playlist management, and offline listening in a fast, lightweight Android app optimized for smooth performance across a wide range of Android devices.

HONORS & AWARDS

Most Innovative Project Of The Year, CSUF ECS Innovation Expo 2024 Competition *Apr 2024*
Summa Cum Laude, Graduated with Honors at California State University, Fullerton *Aug 2024*

PRESENTATIONS

GenAI Summit at UCSD La Jolla, CA
Presenter for 2025 GenAI Summit at UCSD *Feb 2025*
- Presented "Regression Guided Strategy to Automated Facial Beauty Optimization through Image Synthesis" as an academic poster.

National Conference on Undergraduate Research Long Beach, CA
Presenter for NCUR'2024 Conference *Apr 2024*
- Presented the project "Student Success Classification in Higher Education" as an academic poster.

Southern California Conferences for Undergraduate Research Fullerton, CA
Presenter for SCCUR'2023 Conference *Nov 2023*
- Presented "Student Success Classification in Higher Education" as an academic poster.

29th Knowledge Discovery in Data Conference Long Beach, CA
Presenter for SIGKDD'2023 Conference *Aug 2023*
- Presented "Phenological Prediction of Cherry Blossom Bloom Dates in Various Geographic Locations of Japan" as an academic poster for the Southern California Data Science Day track.