

# ERIK NGUYEN

+1 (949) 702-9192 | [20nguyened@gmail.com](mailto:20nguyened@gmail.com) | [linkedin.com/in/erik-nguyen20](https://linkedin.com/in/erik-nguyen20) | <https://eriknguyen20.github.io/>

## EDUCATION

### University of California, San Diego

*M.S. in Computer Science*

La Jolla, CA

Sep 2024 - Present

- **GPA:** 4.00/4.00

- ML Learning Algorithms, Recommender Systems, Probabilistic Reason & Learning, Medical Image Computing, Algorithm Design, AI for Music, Networked Services

### California State University, Fullerton

*B.S. in Computer Science*

Fullerton, CA

Aug 2022 - Aug 2024

## SKILLS

**Programming:** Python, Java, C/C++, Go, JavaScript, Lua, HTML, LaTeX

**Tools & Applications:** Android Studio, VS Code, Git/GitHub, Docker, SQLite, PostgreSQL, GitHub Copilot

**Frameworks & Libraries:** PyTorch, TensorFlow, FastAPI, Flask, React, Pandas, NumPy, Scikit-Learn

## EXPERIENCE

### FORTIS Lab, University of Southern California (USC)

Los Angeles, CA

*Graduate Research Assistant*

Aug 2025 – Present

- Surveying state-of-the-art AI/ML methods for spatiotemporal wildfire **forecasting** and scoping an ML data pipeline, flagging data risks such as temporal leakage.

### 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, California State University, Fullerton (CSUF)

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.

## 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 dynamic agentic workflows and configurable integration of additional MCP servers.

### 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, **FastAPI** for the backend API service, and containerized using **Docker Compose** for cloud deployment.
- Engineered a **LightGBM**-based forecasting model with spatiotemporal feature engineering, automatically retrained via scheduled **cron jobs** to deliver accurate real-time predictions.

### Tversky Neural Networks | Deep Learning Research Implementation

Aug 2025

- Implemented Tversky Similarity and Projection layers in **PyTorch**, translating 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.

#### **Pintrigue | Full Stack Web Application**

*Jul 2025*

- Developed an Instagram-like social media platform for sharing and exploring geotagged photos via an interactive map using a **FastAPI** backend, **React** frontend, **Docker Compose**, and **PostgreSQL** with a **geohash-based index** for fast proximity queries and map-based 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**, supporting local playback, playlist management, and offline listening.
- Integrated **yt-dlp** to enable users to download and play audio from YouTube or other supported platforms directly within the app.

### **PUBLICATIONS**

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#### **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*

### **HONORS & AWARDS**

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

*Apr 2024*  
*Aug 2024*