ELLIE HUANG

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EDUCATION

University of California, Berkeley
Bachelor of Science, Electrical Engineering and Computer Sciences — Expected: May 2025

Relevant Coursework
Data Science Foundations, Data Science Principles & Techniques, Data Structures and Algorithms, Discrete Mathematics & Probability Theory, Database Systems, Computer Programs, Signals and Control Systems, Microelectronic Devices and Circuits

SKILLS

Languages & Libraries: Python, SQL, MATLAB, Pandas, NumPy, Scikit-Learn, SciPy
Tools: Git, MySQL, Tableau, OpenAI API, Langchain, Streamlit, Adobe XD
Hardware & EDA: Altium Designer, Cadence Virtuoso, Ansys Lumerical, KLayout

WORK EXPERIENCE

Taiwan Semiconductor Manufacturing Company — **Jun 2024 – Dec 2024**
Data Science Intern — Hsinchu, Taiwan

- Built a secure, offline data platform using Python and MySQL to centralize KPI tracking and streamline data access in RHEL 9 across silicon photonics division, improving verification and yield analysis workflows
- Developed data analysis pipelines using NumPy, Pandas, and SciPy to analyze performance metrics from high-volume optical testing data for six distinct silicon photonics devices and automate data storage and extraction
- Applied signal processing and ML techniques using Scikit-learn to perform ripple analysis on measurement data, denoising and identifying high-magnitude anomalies to support design optimization for high-profile clients
- Engaged in strategic design and development discussions within the MEMS division, contributing technical feedback when appropriate to support improvements in ultrasound product performance and longevity

RUCKUS Networks — **May 2023 – Aug 2023**
Data Analyst Intern — Singapore

- Designed a scalable ETL pipeline to automate extraction and summarize Ruckus Analytics dashboard data, accelerating root cause analysis and network anomaly detection
- Applied generative AI techniques using OpenAI's API to create intelligent data query and summarization tools tailored to user roles, integrating LangChain to enhance prompt context handling
- Created an interactive Streamlit web application that deliver insights on network incidents via a chatbot interface, identifying specific network outage areas, clients, AP health, etc., enhancing issue diagnosis for IT engineers

Berkeley Chien Lab — **Sep 2023 – Present**
Undergraduate Researcher — Berkeley, CA

- Analyzed biosensor signal data in MATLAB to optimize dual-aptamer sensor performance and improve electrochemical aptamer-based readout accuracy for selective, high-sensitivity detection of target biomarkers
- Investigated electrostatic interaction in biosensor interfaces to improve multi-channel signal clarity
- Designed third-generation PCB for wireless biosensing, integrating CMOS sensing circuit, a Bluetooth-enabled microcontroller, and low-power hardware stack for real-time in vitro monitoring of infused antibiotic and biomarker concentrations
- Supported development of subdermal electrode interfaces for long-term in vivo data acquisition

PROJECTS

Silicon Photonics Design — Oct 2024 – Dec 2024

- Designed and performed corner analysis for manufacturing variability of interferometer circuits and waveguide calculations
- Earned a certificate for UBCx: Silicon Photonics Design, Fabrication and Data Analysis

Spam/Ham Email Classification — Nov 2023

- Developed and validated supervised ML models using feature engineering and cross-validation to classify emails, evaluate different model classifiers, and maximize accuracy

SIXT33N Car — Feb 2022 – May 2022

- Built a voice-controlled robot car using signal processing, analog circuit design, motor control circuitry and steady-state analysis to calibrate the receiving microphone and process sound inputs for accurate response.

Formula SAE Vehicle (Formula Electric) — Sep 2021 – Apr 2023

- Developed an insulation monitoring device PCB to monitor the vehicle tractive system for isolation failures. Also designed and implemented precharge/discharge circuits as part of the car's shutdown circuit.