Matthew **Chang**

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Summary

- Quantitative PhD with extensive research and engineering experience in semiconductor physics.
- 7 years of programming experience in Python for design infrastructure, test automation, and data analysis.
- Excellent analytical, quantitative, communication, and leadership skills.
- Making a career pivot from hardware to machine learning. Learn more in this blog post.

Projects

2024 NFL Big Data Bowl Winner (Kaggle)

Team Leader — *Feb 29, 2024*

- Grand prize winner of the premiere sports data science competition from a field of over 300 teams.
- Developed and trained an XGBoost model to predict defender tackle probability using player tracking data.
- Built the data pipeline that cleaned and transformed raw player tracking data into features for model training and inference.
- Designed experiments to select input features, evaluate model architectures, and optimize hyperparameters.
- Press Release | Podcast | Presentation | Full Report | Code

Technical Skills

- **Programming Languages**. Python (fluent, packages: Numpy, Pandas, PyTorch, Matplotlib, Seaborn), C++ (proficient), MATLAB.
- **Machine Learning.** Transformers, Convolutional Neural Networks, Multi-layer perception, Gradient Boosting (e.g. XGBoost).
- **Relevant Coursework.** Data Structures and Algorithms, Statistics and Probability, Intro to Machine Learning.

Professional Experience

Luminous Computing Inc.

Santa Clara, CA

Vice President of Photonics — *Sept 2021 - May 2023*

- Recruited and lead an engineering team of 9 engineers
- Owned the technical relationship with our silicon photonic foundry partners (GlobalFoundries, SilTerra)
- Lead 3 chip design and test cycles. Delivered the first monolithically integrated electronic/photonic 112 Gbps PAM4 transceiver
- Coded a custom silicon photonic design, simulation, and tapeout software infrastructure (Python, C++)
- Coded a custom test automation framework and a device inventory and management app (Python)
- Built the testing lab from scratch, including budgeting, vendor selection, and pricing negotiation
- Single-handedly performed critical measurements on prototype chips to demonstrate key IP to help secure Series A funding

Apple Inc.

Cupertino, CA

Wireless Design Engineer — *2017 - 2019*

- Developed and maintained python infrastructure for high-throughput test and data collection in factory for the Apple Watch Series 3 and 4
- Supported new product introduction with contract manufacturers
- Collaborated with vendors and internal teams to scope out new projects and reduce wireless interference by design

Rebeless Inc.

Princeton, NJ

Chief Technical Officer — *2015-2016*

- Designed photonic integrated circuits for extremely wideband analog signal processing in telecom applications (microwave photonics).
- Company technology and IP was based on PhD research.

Education

Princeton University

Princeton, NJ

PhD in Electrical Engineering — *2011 - 2017*

12 first author publications | 1 textbook chapter | 5 patents

Penn State University

State College, PA

B.S. in Electrical Engineering — *2007 - 2011*