Matthew **Chang**

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Career Transition Note

I am currently in a career transition from hardware engineering to machine learning software. Although many of my previous experiences are not in machine learning, my fundamental skills in math, statistics, programming, and data analysis are directly transferable to machine learning. I invite you to explore my transition journey in this blog post.

Relevant Experience

2024 NFl Big Data Bowl Winner

Team Leader — *Feb 29, 2024*

- Conceived of the tackle probability model and tackle opportunities framework that led to the winning submission.
- Built the data pipeline responsible for cleaning and converting tracking data into input feature vectors for model training.
- Designed experiments to test different model architectures and optimize model hyperparameters.
- Wrote the data analysis code that used missed tackle opportunities to extract season-long player rankings and team rankings.
- Press Release | Podcast | Presentation | Full Report | Code

Luminous Computing Inc. — *Santa Clara, CA*

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

- Built and led an engineering team, consisting of 9 engineers, from scratch.
- Managed project timelines, budgets, and Gantt charts to successfully achieve company milestones and goals.
- Lead 3 chip design cycles. Delivered the first monolithically integrated electronic/photonic 112 Gbps PAM4 transceiver
- Supervised the development of 300mm electro-optical wafer probers, involving budgeting, vendor selection, and pricing negotiation.
- Coded a custom silicon photonic design, simulation, and tapeout software infrastructure.
- 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
- Support 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.
- Handled both technical development as well as investor pitches and negotiations simultaneously.

Professional Skills

- **Programming Languages**. Python (fluent), C++ (competent, but not fluent), MATLAB (competent but not fluent)
- **Deep Learning Frameworks**. PyTorch
- **Python Libraries**. Matplotlib, Numpy, Pandas
- **Machine Learning Architectures.** XGBoost, Convolutional Neural Networks, Multi-layer perceptron

Education

Princeton University — *Princeton, NJ*

PhD in Electrical Engineering — *2011 - 2017*

Advisor: Paul R. Prucnal. **Dissertation:** *A Microwave Photonic Interference Canceller: Architectures, Systems, and Integration*

Penn State University — *State College, PA*

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