Matthew **Chang**

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Industry Experience

Luminous Computing Inc. *Santa Clara, CA*
VICE PRESIDENT OF PHOTONICS *September 2021 - May 2023*

- Hired and lead a team of 9 engineers from scratch. Developed interviewing methodologies to achieve good technical/cultural team fit.
- Project Management: developed timelines, budgets, and Gannt charts to meet company milestones and goals.
- Lead the team through 3 silicon photonics tapeout design and test cycles. Direct responsibilities: project management, optical link budgeting, layout integration, coordination with packaging and analog mixed-signal teams, and ultimate delivery of chip to specs. Final tapeout led to a monolithically integrated electronic-photonic transmitter and receiver chip that demonstrated open 112 Gbps PAM4 eyes.
- Served as the technical interface for our silicon photonic foundries: GlobalFoundries and SilTerra. Direct responsibilities: process/stack-up development (SilTerra-only), alignment of design needs with foundry capabilities and roadmap, tapeout timeline development, wafer split development, wafer-lot tracking, and communication of test results.
- Supervised the hardware and software development of home-grown 300mm electro-optical wafer probers. Direct responsibilities: budget development, vendor down-selection, pricing negotiation, and technical decision-making to meet timeline and budget goals.

Luminous Computing Inc. *Santa Clara, CA*
SENIOR PHOTONIC ENGINEER *May 2019 - Sept 2021*

- Brought-up a home-grown silicon photonic design, simulation, and tapeout software infrastructure. Personal accomplishments: a python wrapper to go around tapeout C++ engine, creation of compact models for various active/passive silicon photonics devices, and development of auxiliary tools to enable layout integration and foundry-agnostic scripting.
- Designed and simulated custom PN phase shifter junction designs for Mach-Zehnder Modulators from scratch. Developed test circuits and design-of-experiments to characterize junction performance.
- Built the first lab setups for optical measurements, including a home-grown wafer prober and a chip tester for electro-optic measurements.
- Single-handedly performed critical measurements on prototype chips to demonstrate key IP and help secure Series A funding.

Apple Inc. *Cupertino, CA*
WIRELESS DESIGN ENGINEER *2017 - 2019*

- Improved PCB design and layout to mitigate interference between co-located radios in the Apple Watch Series 3 and 4.
- Developed and maintained python infrastructure for high-throughput test and data collection in factory.
- Support new product introduction (NPI) with contract manufacturers.
- Work together 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.
- First product concept was an in-band full-duplex RF interference canceller.
- Handled both technical development as well as investor pitches and negotiations simultaneously.

Professional Skills

- **Code**. Python (Fluent), C++ (Fluent), MATLAB (comfortable but not fluent), GDS-handling (Fluent).

- **Machine Learning**. PyTorch. Familiar with training and inference of basic machine learning architectures.

- **Design and modeling** of silicon photonics active/passive devices: pn phase shifter, mach-zehnder modulator (MZM), micro-ring resonators, thermal phase shifter, multi-mode interference (MMI) couplers, and directional couplers.

- **Simulation and Modeling Tools**. Lumerical MODE/FDTD, Sentaurus TCAD.

- **Test and Measurement Equipment**. Sweepable lasers, photo-detectors, EDFAs/PDFAs, vector network analyzer (VNA), RF spectrum analyzer, source-measure units (SMU), general fiber-optic components, 6-axis optical alginment stages, opto-mechanics, fiber-alignment.

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*