Electrical engineer with experience harnessing data in the development of semiconductor devices. Interested in transitioning to a data science and machine learning engineering role in the tech industry.

**Education**

**University of California, Berkeley**  Graduation: Dec 2019

Master of Information and Data Science GPA: 3.97/4.00

**Georgia Institute of Technology** Graduated: Dec 2015

Master of Science, **Electrical Engineering** GPA: 3.80/4.00

Minor in **Computer Science**

**University of Illinois at Urbana-Champaign** Graduated: May 2014

Bachelor of Science, **Electrical Engineering** GPA: 3.53/4.00

* *Graduated with Honors*
* *Dean’s List*

**Experience**

**International Business Machines (IBM)**

*Product Yield and Characterization Engineer* March 2016-Present

Oversee SRAM and logic related defect monitoring and yield analysis. Responsibilities include tracking and monitoring SRAM yield and analyzing bit fail maps to diagnose chip and wafer level electrical fails. Conduct extensive data mining for correlations and trend analysis to isolate device flaws and improve product yield. Coordinate daily with multiple engineering teams in the microprocessor design and fabrication process to communicate findings.

* Applied unsupervised machine learning techniques to cluster fail maps which enabled easier datamining and defect detection/ classification.
* Implemented a change point detection algorithm to scan through all unmonitored parameters to detect unexpected shifts.
* Implemented a Python and SQL based algorithm to identify and track “fin residue” fail signatures on product wafers.
* Created automated online dashboards and data visualization tools for ease of analysis on SRAM and logic yield health.
* Created a random forest classifier that accurately labels all wafers that were hit by specific types of critical defects.
* Discovered and diagnosed multiple defect signatures that impact in-line SRAM yield through data analysis.
* Discovered and investigated discrepancies in the critical dimensions of device gate and its impact on low voltage yield loss. This resulted in a drastic improvement of low voltage 4 Meg SRAM yield and fixed a systematic defect in the lithography process.
* Analyzed the impacts of device gate height to yield and metrology parameters to help evaluate whether the increased performance justifies the potential yield loss.
* Tracked and analyzed large defect signatures which revealed silicon oxidation occurring during the gate contact etch process as the wafers sit too long in the FOUP. This discovery and fix resulted in a 20% SRAM yield increase.

**PSYONIC Biotechnology**

*Research Assistant* April 2015-July 2015

* Designed, tested, and improved prototype variations of electromyography (EMG) circuits for robotic prosthesis control and documented specifications of how the circuit needs to be built to behave appropriately.
* Experimented with Bipolar and Unipolar power supplies as well as designing various EMG circuits to minimize noise
* Designed and experimented with circuits for pressure sensors to be used in prosthetic fingers for tactile feedback via electrical stimulation to the user
* Worked with a team to develop low cost robotic prostheses for amputees with the capability of recreating tactile feedback and proprioception

**Relevant Academic Experience**

* **Experiments and Causality –** Designed and conducted a controlled field experiment to determine the effects of political news articles on stress.
* **Applied Machine Learning –** Utilized random forest machine learning model to tackle the “Google Analytics Customer Revenue Prediction” problem on Kaggle.
* **Machine Learning at Scale –** Implemented word count on a large text and composed a Naïve Bayes algorithm to classify spam mail using Hadoop MapReduce. Utilizing Spark and a MapReduce framework, I established an algorithm to detect synonyms, applied gradient descent to supervised learning algorithm to predict wine quality, and generated a PageRank algorithm. The final project involves predicting advertisement click-through-rate based on a Kaggle competition by Criteo.
* **Natural Language Processing** – Created custom word embeddings based on raw text data from Reddit. Then built a sentiment model based on biased political embeddings to analyze each group’s difference of opinion on certain topics and people.

**Skills**

***Tools*:** Python, R, Jupyter Notebook, Spark, Hadoop MapReduce, SQL, JMP, Git, MATLAB, C, LC-3, Processing, Java, Arduino language, Unity 3D, and VHDL programming onto an FPGA as well as PCB design on Eagle CAD software.

***Data Skills:*** Data preparation, designing and conducting a controlled experiment, and presenting and communicating the findings in a team environment.

***ML Skills:*** Random forest, linear/logistic regression, kNN, K-means clustering, Adaboost, Naïve Bayes, convoluted neural networks, regularizations, statistical analysis, dashboards and data visualization, data mining.

***Language Skills*:** English (native), Mandarin (native), Thai (fluent), Spanish (intermediate).

**Leadership Experience and Awards**

**Boy Scouts of America Eagle Scout** 1998 - 2010