

# ETHAN LIANG

## 2B SYSTEMS DESIGN ENGINEERING

ehliang.com

github.com/ehliang

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## EXPERIENCE

### DELOITTE - DATA SCIENTIST

Toronto, ON | May - Sep 2017

- Created model to accurately predict if and when an employee will leave the company
- Trained and evaluated logistic regression, random forest and survival forest models to forecast changes in departure probability over time with 89% accuracy
- Aggregated, processed and validated raw data from multiple datasources to generate relevant features for training
- Implemented parallel processing algorithm to improve processing time by 32x
- Discovered high performers using kNN clustering on a DTW curve distance matrix

### SMART TECHNOLOGIES - SOFTWARE DEVELOPER

Calgary, AB | Sep - Dec 2016

- Started the first data science team to identify software and hardware reasons responsible for dropped connections between SMART Boards and phones
- Built ETL pipelines with Python to feed communications data to Hive
- Identified problem connection patterns with a Naive Bayes pattern classifier
- Developed, A/B tested and deployed the first animated learning activity to all Notebook users
- Created migrator tool to auto-convert over 1.3 million Adobe Flash objects into Javascript

### XE.COM - APP DEVELOPER

Newmarket, ON | Jan - Apr 2016

- Overhauled the Android Wear app to reduce load time by 240% and idle battery drain by 90%
- Developed and shipped the core Android app for XE subsidiary company single-handedly
- Lead the XE Amazon Echo initiative and delivered a fully functional prototype
- Rebuilt the XE sales site with React and Node for better scalability and faster load time

## RESEARCH

### CANCER DETECTION WITH MACHINE LEARNING

[ehliang.com/cancerdetect](http://ehliang.com/cancerdetect)

- Developed a model to identify potentially malignant cells in high resolution tissue samples
- Split images into 100x100 pixel strips and summarized using Linear Binary Patterns
- Filtered out blank areas by using edge detection algorithms
- Outperformed the lab ConvNet by leveraging hierarchal clustering to group high risk patches

## PROJECTS

### HEYKANYE

[ehliang.com/heykanye](http://ehliang.com/heykanye)

- Designed a rap music generator that creates tracks in the style of top rappers using lyrics from any other artist to win top prize out of 1000+ competitors at Hack the North
- Implemented hidden markov model to assemble verses based on word frequency and syntax
- Invented a sync algorithm to merge text-to-speech snippets to any beat
- Employed Microsoft Azure Web Language Model API to generate context-relevant filler

### XPRESSCART

[ehliang.com/xpresscart](http://ehliang.com/xpresscart)

- Created a retail self-checkout Android app with integrated payments and purchase validation
- Engineered a smart shopping cart to assess item weights and report data back to the phone
- Integrated the Nessie API for payment processing and a barcode API for item recognition

## SKILLS

### LANGUAGES

Python, SQL, C++, Java, R, Javascript

### DATA

pandas, numpy, seaborn, nltk, multiprocessing  
plyr, ggplot2, rfsrc  
scikit-learn, h2o.ai, tensorflow  
Hadoop, Spark, Hive, Hadoop

### WEB

node, react, AngularJs, sass, bootstrap, webpack

### TOOLS

Excel, AWS, Docker, Apache Server

## EDUCATION

### UNIVERSITY OF WATERLOO

SYSTEMS DESIGN ENGINEERING - 2B

GPA: 3.6

## AWARDS

### WINNER

DELOITTE HACK(BAE) - Jul 2017

### RESEARCH AWARD

UNIVERSITY OF WATERLOO - Jul 2017

### GRAND FINALIST

HACK THE NORTH - Sep 2016

### MICROSOFT AZURE API PRIZE

HACK THE NORTH - Sep 2016

### TOP 10

NORDIC IOT HACKATHON - Apr 2016

### CAPITAL ONE NESSIE API PRIZE

PENNAPPS XIII - Feb 2016

## INTERESTS

### ENTREPRENEURSHIP

Member of the Velocity Startup Residence,  
Pursuing an ethereum venture with a small team

### MMA

Taking Muay Thai Classes, Never missed fight night

### AIRSOFT

Regular tournament attendee