Elliot Pickens

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Education

Carleton College
Northfield, MN

Bachelor of Arts: Mathematics — *Aug. 2016 - Mar. 2020*

- **Relevant coursework:** Probability, Statistical Inference, Regression Analysis, Data Science, Bayesian Statistics, AI, NLP

Cornell Tech
New York, NY

MEng: Operations Research and Information Engineering — *Aug. 2021 - Jun. 2022*

- **Current coursework:** Applied Machine Learning, Optimization Methods, Modeling Under Uncertainty, Data, People, & Systems
- **Proficient:** Python, R, C, Java, HTML, Git, SQL, Numpy, Pandas, Data analytics & visualization **Tools Highlight:** RStudio, Tidyverse

Experience

University of Malaya
Kuala Lumpur, Malaysia

Data Science Intern — *Nov. 2019 - Jan. 2020*

- Lead data science workshops (in Python) at the University of Malaya & Universiti Tun Hussein Onn Malaysia
- Gave talks on research data management at the University of Malaya & Universiti Tun Hussein Onn Malaysia
- Supported The University of Malaya's *Open Data* & *Open Science* initiatives

Franklin Templeton
San Mateo, CA

Global Macro Research Intern — *Jun. 2019 - Aug. 2019*

- Independently produced and presented a 35+ page report on the economic and political state of Vietnam
- Extensively used R (ggplot, purr, dplyr, and the entire tidyverse suite) to organize, analyze, and visualize data
- Used R's BSTS package to create forecasts using Bayesian Structured Time Series

Carleton College
Northfield, MN

Data Squad Senior Designer, Programming Assistant, Technology Support Associate — *Mar. 2018 - Sept. 2020*

- Oversaw and directed projects being completed by less experienced Data Squad members
- Held quantitative reasoning office hours for senior economics majors seeking R and Python help
- Gathered, cleaned, visualized, and analyzed PDF text data for various projects
- Provided data visualization support for students and faculty (R & Python)
- Wrangled and organized data for student and faculty projects (R & Python)

Data Science & Analytics Projects

Graphical Inference with Convolutional Neural Networks

- Built and curated an image data set based on methods outlined in a paper on scagnostics for training and testing
- Implemented and tested a number of different convolutional neural network architectures using Python and Keras
- Awarded honorable mention for my paper on the results of my testing by the Undergraduate Statistics Research Project Competition
- **Utilized:** Python, Keras, Tensorflow, Pandas, Numpy

The Scenario Approach and Guaranteed Error Machines

- Implemented a version of the Guaranteed Error Machine algorithm from scratch in Python
- Expanded the algorithm to allow for additional functionality (bagging, random forest, boosting)
- Tested the effects of my expansions on real and synthetic data sets
- **Utilized:** Python, Numpy, Pandas, SciPy

Natural Language Image Search

- Used a CLIP based model to return images based on text input
- Tested various architectures with different image and language encoders (including BERT, GPT2, ResNet50, ViT, etc.)
- Fine tuned models on task specific data after pre-processing the data to better suit the task
- **Utilized:** Python, PyTorch, Hugging Face, CLIP, Scikit-Learn, Gensim, Numpy, Matplotlib

Soybean Price Predictions

- Detected time dependent changes in the data using Bayesian methods
- Predicted future prices using a combination of XGBoost and LSTMs
- Won 1st place in the FASTCon predictive analytics bonus challenge (undergraduate division) using the algorithm
- **Utilized:** Python, Keras, PyMC, XGBoost, Scikit-Learn, Matplotlib

Bayesian Statistics in Python

- Adapted labs from R to Python for Prof. Hu's Bayesian Statistics course at Vassar
- **Utilized:** Python, Scikit-Learn, PyMC, PyJags, SciPy, Numpy, Matplotlib

Research

- Received distinction for my Senior Integrative Exercise (Comps) on Optimization with Uncertainty: the Scenario Approach (2020)
- Awarded honorable mention for my paper "Graphical Inference with Convolutional Neural Networks" by the Undergraduate Statistics Research Project Competition (USRESP, Spring 2019)
- Collaborated on, and published a paper titled Locating a Smartphone's Accelerometer in The Physics Teacher (Cited by 10)
- Assisting in machine learning research on 3D reconstruction (Spring 2020)
- Independent Study in Bayesian Statistics with Python (Vassar College, Winter/Spring 2020)
- Independent Study in Reinforcement Learning (Carleton College, Fall 2019)
- Independent Study in Statistical Learning (Carleton College, Spring 2018)

Leadership & Affiliations

- Carleton Data Science Club: President and Founder - taught data science to interested students
- Carleton Model United Nations: 4 year delegate, award winner at LAMUN (UCLA Model UN)
- *Data Pun TBD* blog on machine learning and statistics (epickens.github.io)