Poom Chiarawongse

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Values and Competencies

- A love for all things quantitative
- Experience in data science, data visualization, web development, quantitative finance, physics research and graduate mathematics
- A strong desire to make a difference
- An eagerness to learn new things
- The ability to ponder deeply on complex issues
- Experience contributing to open source

Experience

Data Science Intern
Brown Data Science and Business Intelligence
Sep 2017 – Present

- Current: contribute to `github.com/bensadeghi/DecisionTree.jl`, an open-source Julia library for decision tree learning and adaptive-boosting by adding (a) support for sample weights, pre-pruning and user-defined purity functions (b) compatibility with Julia 1.0 and and (c) optimizations that result in 6-fold performance increase and 100-fold memory footprint decrease
- Compiled information like recurring topics extracted from the British Hansard, a corpus of 250 million words, using natural language processing algorithms
- Compute optimal embedding of high dimensional topic data in low dimensional space to create perceptually accurate visualizations of topic clusters in the corpus
- Designed and maintained architecture-less webpages for data visualization

Programming Intern
Brown School of Professional Studies
Sep 2017 – Present

- Current: write tools for automatically turning Latex files into edX courses
- Rewrite and maintain a legacy web application for course materials
- Automated the process of creating online pages for courses
- implemented a HTML-aware search-and-replace on top of the API with a user-friendly interface

Quantitative Research Intern
WorldQuant Research Bangkok Office
Jul 2018 – Aug 2018

- Trained a recurrent neural network for predicting returns using price-volume and companies' fundamentals with 2% turnover and an out-of-sample Sharpe of 1.6 while being market neutral
- Increased out-of-sample risk-adjusted returns on 73.8% of 1800 of the trading strategies in production with minimal change in turnover, and average Sharpe ratio increase of 0.2 using optimization, quadratic programming, clustering, simulated annealing, polynomial regression and principal component analysis
- Devised a method of using the covariance of returns from trading strategies to get an estimator of the instrument covariance matrix with a smaller variance of error

Student Researcher
Wesleyan University Department of Physics
Mar 2017 - Sep 2017

- Collaborated with Yale University researchers to predict the theoretical transmission eigenvalue distributions of light propagating through multimode fibers
- Proposed using Free Probability to characterize the spectral distribution of random matrices
- Derived the transcendental equations whose solution is the eigenvalue density
- Wrote the solver for the equations and confirmed predictions against experiments
- *Statistical description of transmission through multimode fibers with mode-dependent loss.* P. Chiarawongse, H. Li, W. Xiong, C. W. Hsu, H. Cao, T. Kottos. arXiv: 1806.11149 (2018).

TA/Tutor
Wesleyan University
Aug 2016 - May 2017

- Professor recommended dean's tutor for Imperative Programming
- Drop-in tutor for the Mathematics department
- Teaching assistant for Statistics for Economics

Education

Brown University
Sc.B. Mathematics Computer Science
Sep 2017 – May 2019

- 4.00/4.00 GPA. With a focus on Artificial Intelligence and Machine Learning.
- Coursework: Artificial Intelligence. Machine Learning. Deep Learning. Design and Analysis of Algorithms. Information Theory. Statistics (graduate). Probability Theory (graduate). Functional Analysis (graduate). Partial Differential Equations (graduate). Commutative Algebra (graduate). Number Theory (graduate). Algebraic Geometry (graduate).

Wesleyan University
Aug 2015 – Sep 2017

- 3.90/4.00 GPA. Transferred to Brown.
- Awarded the Sherman Prize (2016) and the Robertson Prize (2017) by examination and faculty nomination for excellence in freshman and sophomore mathematics.
- Won Honorable Mention at the ASA Wesleyan DataFest.
- Coursework: Functional Programming. Automata Theory. Imperative Programming. Bayesian Data Analysis. Latent Variable Analysis. Hierarchical Linear Models. Special Relativity. Chaos Theory. Modeling and Data Analysis. Measure Theory (graduate). Algebraic Topology (graduate). Algebra (graduate).

Personal Projects

Language Detection
- achieved 99.5% test accuracy in classifying sentences by language (21 European Languages).

One Shot Learning
- achieved 98.6% test accuracy for 20-way character matching on the Omniglot dataset using matching networks with embedded Fourier transform and spatial transformer networks and data augmentations (Vanilla matching networks has 93.8% accuracy using 33% larger training set.)

Cipher Cracker
- reverse-engineered simple substitution ciphers with state-dependent simulated annealing with 95%+ accuracy for Wikipedia excerpts longer than 3,000 characters

2048 Solver
- wrote a solver for 2048 using tree search that beats the game 90% of the time using 0.1s per move with a mean score of 35,500 and a maximum of over 100,000

Reddit Haiku Bot
- wrote a bot (reddit.com/u/haikubot-1911) that gained 400,000+ karma and 11 reddit golds in two months formatting comments into haikus

Shifts Scheduler
- wrote student shifts scheduler for Wesleyan's Reunion and Commencement ceremony using graph coloring algorithms and makespan minimization.

Skills and Technical Proficiencies

Languages and Libraries
- Python. Scikit-Learn. Pandas. Tensorflow. Matplotlib. NLTK. TextBlob. PyTorch. Sympy. SQL. Node.js. Javascript. HTML. CSS. Vue.js. Bootstrap. d3.js. Julia. C. Rust.