

# Poom Chiarawongse

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## Experience

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

- Current: contribute to [github.com/bensadeghi/DecisionTree.jl](https://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 (c) optimizations that result in 6-fold performance increase and 100-fold memory footprint decrease.
- Made efficient pipelines for data extracted from the British Hansard, a 250-million-word corpus.
- Visualized topic clusters in the corpus by finding low-dimensional embeddings of topics data.

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

- Implemented a market-neutral trading strategy with 2% turnover and 1.9 Sharpe ratio using a recurrent neural network with price, volume, and companies' fundamentals as input.
- Devised model-agnostic computational methods that increased out-of-sample risk-adjusted returns of 73.8% of 1800 of the trading strategies in production while preserving market neutrality. (+0.2 average change in Sharpe ratio with minimal change in turnover).

**Student Researcher**  
Wesleyan University  
Department of Physics  
Mar 2017 - July 2017

- Proposed using free probability theory to characterize the singular value distribution of random matrices associated to the transmission of light through imperfect multimode fibers.
- Derived the transcendental equations whose solution is the eigenvalue density of said matrices.
- Wrote numerical solvers and confirmed theoretical predictions with experimental data.
- *Statistical description of transport through multimode fibers with mode-dependent loss.*  
Poom Chiarawongse et al 2018 *New J. Phys.* **20** 113028

**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.
- Coursework: Artificial Intelligence. Machine Learning. Deep Learning. Design and Analysis of Algorithms. Information Theory. Probability Theory (graduate). Functional Analysis (graduate). Partial Differential Equations (graduate). Commutative Algebra (graduate). Number Theory (graduate). Algebraic Geometry (graduate).

**Wesleyan University**  
B.A. Mathematics and  
Computer Science  
Aug 2015 – Sep 2017

- 3.90/4.00 GPA. Dean's list all 4 semesters. Transferred to Brown University.
- Won Honorable Mention at the ASA Wesleyan DataFest (2016), Sherman Prize (2016) and Robertson Prize (2017) by examination and faculty nomination for excellence in mathematics.
- Coursework: Imperative Programming. Functional Programming. Automata Theory. Modeling and Data Analysis. Measure Theory (graduate). Abstract Algebra (graduate).

## Mini Projects

**Open Source  
Language Detection  
One Shot Learning**

- Jensen-Shannon divergence (Scipy) and Goldwasser-Micali encryption (SymPy)
- Recurrent neural classifier for 21 European languages with 99.5% test accuracy
- Fully convolutional matching networks for 20-way character matching on the Omniglot dataset with 98.6% test accuracy using Fourier transform, spatial transformer network and data augmentations. (Vanilla matching networks has 93.8% accuracy using 33% larger training set.)

**Cipher Cracker**

- Substitution cipher cracker using state-dependent simulated annealing with 95%+ accuracy for Wikipedia excerpts longer than 3,000 characters

**2048 Solver  
Reddit Haiku Bot**

- 2048 solver with a win rate of 90%+, a mean score of 35,500 and a maximum of 100,000+
- Reddit bot ([reddit.com/u/haikubot-1911](https://reddit.com/u/haikubot-1911)) that gained 400,000+ karma and 11 reddit golds in two months formatting comments into haikus

**Shifts Scheduler**

- Shifts scheduler for Wesleyan's Reunion and Commencement 2016 using graph coloring