Randall Pulido

Computer Scientist

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Education

9/2018 – 6/2022 **California Institute of Technology** - Pasadena, California
Bachelor of Science in Computer Science

Work Experience

5/2021 – 1/2022 **Software Engineering Machine Learning Internship**
Edammo Inc

- Improved the company's cloud-based regression and classification algorithms to ensure faster and more accurate results.
  - Deployed a validation technique for model selection / ensembling using a nearest-neighbor approach.
    - Faster and up to 4% more accurate than standard 10-fold cross validation.
  - Implemented a dimensionality reduction method using an extreme learning machine approach and the Whale Optimization Algorithm.
    - Twice as fast as standard dimensionality reduction methods with comparable accuracy.
  - Developed a novel anomaly detection and replacement algorithm using dimensionality reduction and k-scan methods.

6/2019 – 9/2019 **Summer Undergraduate Research Fellowship**
Caltech Student-Faculty Research Program, Kirschvink Paleomagnetics Lab

- Generated visualizations, based on the First Order Reversal Curves technique, that more accurately characterize magnetic particles.

Project Experience

3/2021 – 6/2021 **Covid-19 Machine Learning Research Project**

- Predicted future vaccination rates in U.S. counties using demographic data and a variety of learning algorithms.
  - Tested standard neural network, gradient boost, deep autoregression, Facebook prophet, and LSTM models to achieve >98% predictive accuracy.
- Analyzed feature importance to design a more equitable distribution of vaccines.

4/2021 – 6/2021 **Exploring Noise Propagation of Adversarial Images**

- Quantified image similarity, via applying various error metrics, throughout image evaluation by three adversarially-trained CNNs with differing denoising architectures to understand noise propagation of adversarial images.

9/2020 – 1/2021 **Stock Market Predictor**
Individual, Independent Project

- Applied various learning algorithms, including a RNN model, to evaluate whether a given stock is a "buy" based on same-day data and previous stock history with (theoretically) >90% accuracy.

Skills

Python, C, C++, Java, OCaml, Haskell, R, MySQL, MATLAB, HTML, CSS, JavaScript, Mathematica

Scikit-Learn, PyTorch, TensorFlow, Keras, XGBoost, Numpy, Pandas, Git, Linux

Coursework

General

- Programming Methods
- Data Structures
- Parallelism
- Algorithms
- Computing Systems
- Distributed Computing
- Relational Databases
- Functional Programming
- Decidability and Tractability

Machine Learning

- Learning Systems
- Data Mining
- Advanced Topics in Machine Learning

Mathematics

- Probability and Statistics
- Probability Models
- Bayesian Statistics
- Applied Linear Algebra
- Discrete Mathematics