Jeffrey Chiou

Data Scientist

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Skills

AI & Machine Learning

- PyTorch, Keras, TensorFlow
- scikit-learn, pandas, numpy, tidyverse
- SQL: PostgreSQL, SQLite
- Neural networks, computer vision, Natural Language Processing (NLP)
- Pyro, PyMC3, JAGS
- Bayesian neural networks and Gaussian processes
- Forecasting: Prophet
- Hyperparameter optimization, AutoML

Tools

- Python, R, JavaScript, MATLAB
- Viz: Matplotlib, ggplot2, D3.js
- Flask, FastAPI
- DevOps: Docker, AWS
- Git

Math

- Probabilistic graphical models, causal inference, and Bayesian modeling
- Information theory
- Probability and Statistics

Work

Artificial Intelligence Fellow

Oct. 2020 - Present
Pi School, Rome, Italy

- Created effective classification models for core business of medical diagnosis. Compared methods including **boosting**, **Bayesian models**, and **neural networks**.
- Upheld stakeholder interests and clearly communicated technical details while working remotely in a team.
- Won grant by passing competitive interview process.

Machine Learning Engineer

Feb. 2020 - Apr. 2020
Holy Grail, Inc. San Francisco, CA

- Led development of a successful machine learning **edge device** prototype and shipped it to clients.
- While working remotely, implemented and deployed cutting edge **probabilistic machine learning** techniques.
- Managed and added features to both the front-end and the back-end of the customer-facing web app, including **PostgreSQL database**.
- Updated **REST API** and managed **distributed cloud services (AWS**).

National Science Foundation (NSF) Graduate Fellow

Apr. 2013 - Sep. 2016
University of Pittsburgh, Carnegie Mellon University

Collaborated with Pitt and CMU labs on brain-computer interfaces (BCIs).

- Used various engineering and machine learning techniques, such as **dimensionality reduction, Kalman filtering,** and **regression**, to process and analyze neural data from electrode array-based BCI experiments.
- Spearheaded lab code refactoring effort emphasizing reuse, consistent style, documentation, and organization.
- Effectively communicated complex ideas through data visualization, presenting at journal clubs, teaching review sessions as a TA, and volunteering for a high school science outreach program.

Projects

Pinkline

Lead developer for a full-stack machine learning web application with a **Flask** and **relational database** backend. Uses a **data pipeline** and **sklearn** to **cluster** patient locations, identifying where to send healthcare teams. Collaboration with an Indiana University lab.

JeffChiou.com

Open source website and blog about AI, tech, neuroscience, and philosophy.

Genetic Algorithms on Spiking Recurrent Neural Networks

Used **genetic algorithms** to induce oscillatory behavior in a population of Izhikevich neurons.

Education

University of Pittsburgh

Aug. 2012 - Dec. 2016

M. S. Neurobiology, with thesis

Relevant Coursework

- Computational Neuroscience Methods (Pitt Math 3375) - Numerical methods (**simulation**), neuron models
- Neural Data Analysis (CMU 86-631) - Information theory, estimation, classification, LDA, signal detection theory, and continuous decoding
- Neural Signal Processing (CMU 18-698) - Derived and implemented algorithms and models from equations. Expectation-maximization, PCA, factor analysis, log-exp-sum, Gaussian mixture models, stochastic processes, etc.

Washington University in St. Louis

Aug. 2008 - May 2012

B. A. Biology, Neuroscience Track
B. A. Philosophy-Neuroscience-Psychology, Cognitive Neuroscience Track

Awards

NASA International Space Apps Challenge Global Nominee

2016

Prototyped Dagu, an app concept providing pastoral communities with networking capabilities and information about water availability, grassland, market prices, and safe routes.

NSF Graduate Research Fellowship

2013

Designed a brain-to-brain interface experiment in 2012 proposal, predating the first paper published by another group (Pais-Vieira, Lebedev, Kunicki, Wang, & Nicolelis 2013). Also proposed intra-brain artificial circuits.