github.com/ericmfischer
linkedin.com/in/ericmfischer
emfischer712@ucla.edu
(310) 408 - 0200

Eric M. Fischer

Computer Vision Engineer

Background

Purpose: I received my undergraduate degree at UCLA and am currently pursuing a MS in Computer Science with a specialization in Artificial Intelligence. More specifically, my focus is on generative modeling techniques in computer vision and natural language processing. My coursework at UCLA spans statistics, computer science, and electrical and computer engineering, and this Fall 2019 I am applying to Artificial Intelligence PhD programs.
Research Interests: *Deep Learning*: Generative Learning, Computer Vision, Natural Language Processing, Signal Processing; *Statistics*: Monte Carlo Methods, Time Series, Econometrics

Technical Skills

Machine Learning: CNNs, LSTMs, RNNs, GRUs, Generative Learning, Reinforcement Learning, SVM, Neural Network Optimization, Signal Processing, Data Mining, Matrix Algebra, Multivariable Calculus, Applied Probability
Statistics: Modeling, Bayesian Statistics, Markov Chain Monte Carlo Methods, Time Series, Econometrics
Software Engineering: Operating Systems (Linux, macOS, Ubuntu), Languages (Python, C/C++, R, JavaScript, PHP, Ruby, others), Frameworks (Pytorch, Tensorflow, Keras, React), DevOps (Git, AWS, Splunk, Cloudflare), Web Tools (Heap, Optimizely, NewRelic), Other (data cleansing, shell scripts, TDD)

Research

CNN and LSTM Study with EEG Data | github.com/EricMFischer/eeg-Classification | 2019
- Used electroencephalogram (EEG) data from 25 EEG electrodes placed on heads of subjects asked to perform tasks
- With heavy data augmentation and Convolutional Neural Network (CNN) and Long Short-Term Memory (LSTM) models applied to continuous data (4 second samples), predicted at 72% test accuracy the tasks asked of subjects

Gibbs vs Cluster Sampling of Ising/Potts Model | github.com/EricMFischer/gibbs-cluster-sampling-ising-potts | 2019
- Convergence analysis of Gibbs vs cluster sampling (Swendsen-Wang) of Ising/Potts with coupled Markov chains

Neural Attentional Rating Regression | github.com/EricMFischer/neural-attentional-rating-regression | 2019
- For reviews information, implemented CNN Text Processor for review processing with attention-based pooling layer and neural latent factor model for (ratings) prediction layer
- Outperforms state-of-the-art recommendation models based on matrix factorization, deep learning in rating prediction

First-Order Optimization Methods for SVM | github.com/EricMFischer/first-order-optimization | 2019
- Implementation and convergence analysis of stochastic gradient descent (SGD) with momentum, SGD with Nesterov momentum, Root Mean Square Prop (RMSProp), and ADAM for Support Vector Machine (SVM) classification

Image Captioning with LSTM | github.com/EricMFischer/lstm-image-captioning | 2018
- Long-Short Term Memory (LSTM) shown superior to Recurrent Neural Networks (RNN) on long data sequences

Collaborative Filtering Recommender System | github.com/EricMFischer/naturebox-tensorflow | 2017
- Created logistic regression and k-nearest neighbors models in Tensorflow/Pytorch to guide product recommendations
- Built recommender system with collaborative filtering inspired by Netflix Prize submissions

Education

University of California Los Angeles | M.S. Computer Science **2018 - 2020**
- Specialization: Artificial Intelligence
- Machine learning coursework spans Stats, CS, and EE
- Will apply to UCLA PhD Fall 2019

Hack Reactor | Advanced Software Engineering Immersive Program | San Francisco, CA **2015**
- Full stack software engineering curriculum with emphasis on data structures and algorithms

University of California Los Angeles | B.A. Philosophy | 3.90 Major GPA **2009 - 2013**
- Focus: Philosophy of Language, Classical Logic

Universidad Complutense de Madrid | Philosophy | Madrid, Spain **2011 - 2012**
- One year of Philosophy coursework in Spanish

Coursework

UCLA

STAT 200A - *Applied Probability* (audited)
STAT 201C - *Advanced Modeling and Inference*
STAT 202B - *Matrix Algebra and Optimization*
STAT 202C - *Monte Carlo Methods for Optimization*
CS 247 - *Advanced Data Mining*
CS 251A - *Advanced Computer Architecture*
CS M266A - *Statistical Modeling and Learning in Vision and Cognition* (audited)
CS 260 - *Machine Learning Algorithms*
CS M276A - *Pattern Recognition and Machine Learning*
CS 269 - *Seminar in Artificial Intelligence: Deformable Models*
ECE 236C - *Optimization for Large-Scale Systems*
ECE 239AS - *Neural Networks and Deep Learning*

Independent Coursework

Deep Learning Specialization - *I) Neural Networks and Deep Learning, II) Improving Deep Neural Networks: Hyperparameter Tuning, Regularization, and Optimization, III) Structuring Machine Learning Projects, IV) Convolutional Neural Networks, V) Sequence Models*, Stanford University on Coursera
Mathematics for Machine Learning - *I) Linear Algebra, II) Multivariate Calculus, III) PCA*, ICL on Coursera
Neural Networks for Machine Learning, University of Toronto on Coursera
Machine Learning, Stanford University on Coursera
Digital Signal Processing, École Polytechnique Fédérale de Lausanne
Probabilistic Graphical Models - *I) Representation, II) Inference, and III) Learning*, Stanford University on Coursera
Linear Algebra, University of Texas Austin on edX
The Science of Uncertainty, MIT on edX
Algorithms Specialization - *I) Divide and Conquer, Sorting and Searching, and Randomized Algorithms, II) Graph Search, Shortest Paths, and Data Structures, III) Greedy Algorithms, Minimum Spanning Trees, and Dynamic Programming, IV) Shortest Paths Revisited, NP-Complete Problems,* Stanford University on Coursera

Free Reading

Pattern Recognition and Machine Learning, Christopher M. Bishop
Causality: Models, Reasoning, and Inference, Judea Pearl
Deep Learning, Ian Goodfellow, Yoshua Bengio, Aaron Courville

Professional Experience

NatureBox | Full Stack Software Engineer | Redwood City **2016 - 2018**

- Introduced logistic regression and k-nearest neighbor models to guide product recommendations (see *Collaborative Filtering Recommender System* in Research Projects)
- Principal architect for new React web application after Naturebox added direct-to-consumer business
  - Used Flux/React architecture with Flow and ImmutableJS additions; constructed new backend API
- Led projects such as Litle to Stripe payment processor migration, Login and Pay with Amazon, Referrals, API v2
  - Worked on frontend, backend, and with DB, performed most devops, security tasks, led engineering meetings

Cinemagram | Software Engineer | San Francisco **2015 - 2016**

- Worked with JavaScript, Ruby, SQL, and Redis to construct data management interfaces
- Wrote and ran Snapchat client in PHP for growth campaigns, acquiring roughly 150K users in 6 months

Freedom Spoke | Software Engineer | freedom-spoke.herokuapp.com | San Francisco **2015**

- Developed search engine that queries multiple APIs for flights, like QPX API from Google and Skiplagged.com API

Flinja | Software Engineer | Los Angeles **2012 - 2014**

- Main contributor for Flinja.com website that won DEMO's (VentureBeat/IDG) 2012 award for Best Social Platform

Additional Information

Other technical interests: Built own Personal Computer with Nvidia GPU for machine learning, built 3d printer, SpaceX
Personal: Fluent in English, Spanish, and Portuguese