

Matthew Howard

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Education

Master of Science, Computer Science University of California, Santa Cruz	Jun 2019
Bachelor of Science, Computer Science <i>Mathematics Minor</i> University of Delaware	Jun 2014
Bachelor of Mechanical Engineering University of Delaware	Jun 2014

Experience

Data Scientist Intern Adobe Systems, Inc.	Oct 2015 - Mar 2016
<ul style="list-style-type: none">Machine learning research for resolving unique users across devices from anonymous web logs.Prototyped models using the Java-based probabilistic soft logic (PSL) framework for relational learning.Aggregated web log data to engineer features that captured transitive relationships of users across multiple modes of access (e.g., geographic clustering, device similarities).Trained and tested high-dimensional probabilistic models with AWS EC2.	

Research Scientist Intern Palo Alto Research Center (Xerox PARC)	Jun 2015 - Sep 2015
<ul style="list-style-type: none">Developed novel probabilistic model with Java-based probabilistic soft logic to predict future mobile device usage activity based upon user usage and contextual features (e.g., phone state, recent device actions).Improved action prediction accuracy within 1 minute to 75% vs. 68% for baseline SVM-HMM over 103 users.Designed Python/SQL pipeline to digest TB-scale DeviceAnalyzer dataset into model-ready feature databases.Automated hourly device usage visualizations to identify contextual dependence of paired user actions.	

Graduate Student Researcher University of California, Santa Cruz	Oct 2014 - Mar 2016
<ul style="list-style-type: none">Research conducted in the area of machine learning and AI, focusing on preference networks.Developed probabilistic approaches to preference ranking problems for relational networks (e.g., social nets).Designed a method to cast non-convex optimization of the ranking metric NDCG as a convex optimization for utilization in learning of rankings via graphical models known as Hinge-loss Markov random fields (HL-MRFs).	

Projects

SpotifyMap spotifymap.com	Launched Jul 2020
<ul style="list-style-type: none">Interactive dashboard for users to visually explore and listen to the most streamed and viral songs on Spotify, updated daily for 60+ countries (data scraped via Spotify Charts).Front-end built with React; data scraping and processing via Python (Pandas, requests).	

First-Authored Publications

- [1] "Video Manipulation Detection via Recurrent Residual Feature Learning Networks"
in IEEE Global Conference on Signal and Information Processing. Ottawa, ON. Nov 2019.
- [2] "Predicting Substance Misuse Admission Rates via Recurrent Neural Networks"
in IEEE Global Humanitarian Technology Conference. Seattle, WA. Oct 2019.
- [3] "Automatically Mining Software-Based, Semantically-Similar Words from Comment-Code Mappings"
in Mining Software Repositories. San Francisco, CA. May 2013. 🏆 **Best Paper Award Winner**

Skills

Programming: Python, Java, SQL, JavaScript, Bash, R, C++, Scala, HTML, CSS, SCSS

Frameworks/Libraries: React, Git, Bootstrap, Django, Docker, AWS EC2, REST

Machine Learning: Pandas, Numpy, Keras, TensorFlow, Scikit-learn, NLTK