CURRICULUM VITAE

Mike H. Wu

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INTERESTS

Machine Learning, Computer Vision, Bioinformatics, Entrepreneurship, Probabilistic Programming

PROGRAMMING SKILLS

General: Python, R, VBA, MATLAB, Ruby, Lua/Torch, C, C++
Web Programming: Ruby on Rails, Node, Angular, Flask, HTML, CSS, Javascript/Jquery, Latex

EDUCATION

Yale University — Computer science BS;
Undergraduate, 2016 Expected
Yale Engineering and Science Likely Letter Admit, Yale College Council Science Committee

Oxford University (New College);
Visiting student, 2015
Member of the Oxford Union, Oxford Computing Society, Oxford Engineering Society

RESEARCH EXPERIENCE

Topological Analysis of Global Structure in the Universe; Jessica Cisewski Lab @Yale 2015 - Present
Persistent homology and randomized hypothesis testing for global comparisons of Universe simulations.

Patient ICU Intervention & Weaning Prediction; Doshi-Velez Lab @Harvard 2015
Designed deep learning and language model learning techniques to predict life support usage a priori field expertise.

Probabilistic Programming Research; Frank Wood Lab @Oxford 2015
Confidential work with MCMC inference. Paper submitted to NIPS 2015.

Crowd Facial Detection from Single Image Inputs; 2012-2014
Software to extract maximal facial feature information from single noisy frame datasets.

Autonomous Robot Construction with Optical Flow; 2011-2013
Software and hardware for a robot to analyze a room, extract edges, and self-navigate to a destination.

Optical Based Vehicular Blind Spot Detection; 2010-2012
Software designed as a cheap solution for object detection in the blind spot given pixel motion.

Magnetic Heating of Particles under an Alternating Field; Fahmeed Hyder Lab @Yale 2012-2013
Visualization and data software to track cancer cell apoptosis while under fMRI fields.

TEACHING EXPERIENCE

MGT 656 (Management of Software Development) Teaching Assistant 2015
School of Management course to teach HTML, CSS, Javascript, Node. Organized lectures and built Node apps for teaching.

How to Start a Startup (YCombinator @Yale) 2014
Led a extracurricular course on YCombinator's startup founder studies at Yale.

PUBLICATIONS

- M. Ghassemi, **M. Wu**, P. Szolovits, F. Doshi-Velez. "Discrete Switching-State Systems for Intervention and Outcome Predictions: Understanding Vasopressor Administration and Weaning in the ICU", Submitted to AAAI 2015.
- **M. Wu**, Y. Perov, F. Wood, H. Yang. "Spreadsheet Probabilistic Programming", Submitted to PLDI 2015
- M. Krishnan, **M. Wu**, S. Lee, Y. Kang. "Autonomous Mapping and Navigation through Utilization of Edge-based Optical Flow and Time-to-Collision", ARPN Vol. 7, No. 12, 2012, CISSE 2012
- **M. Wu**, M. Krishnan. "Edge-based Crowd Detection from Single Image Datasets", IJCSI Vol.12, No.1, 2015
- M. Wu, J. Cisewski. "A Kernel Density Hypothesis Testing Framework for Differentiating Warm and Cold Dark Matter", Astronomy and Computation 2016, In Progress.
- M. Wu. "Financial Market Prediction", ArXiv 2015.

WORKSHOPS/TALKS

Yale Technology Summit Workshop Speaker 2015
Conference workshop on "Introduction to Deep Learning and Torch".

YHack Flask Web App and Angular Workshop Speaker 2015
Hackathon workshop on programming in Flask with Angular.js. Overview of backend and frontend.

PROFESSIONAL EXPERIENCE

Co-founder, Aflume; 2013-2014
A web platform allowing fans to directly support the music artists in return for exclusive content. Backend Rails app with video streaming support, and in-house webpage designing tech. Worked with 20 artists. Yale Venture Creation Program.

Data Analyst, Ionis Pharmaceuticals; 2013 summer
Developed a machine learning model (using SVM) to predict antisense technology effectiveness before drug production.

Student Partner, Microsoft; 2014-2015

Programming Analyst, San Diego Supercomputer Center; 2010-2012
Worked on GPU applications and benchmark testing for AMBER molecular dynamics.

PROJECT EXPERIENCE

YHack Founder; 2013-Present
An international hackathon with 3000 applicants and 50 corporate sponsors each year. The goal is to encourage students to use their knowledge and build practical applications.

CodeBlue Founder; 2014-Present
A high school "learnathon" intended to teach high school students basic web programming. 300 annual participants.

Penpal; 2014-Present
A writing utensil with smart software/hardware built to help people with essential tremor write properly.

Financial Market Predictor; 2015
An exercise to learn more about ML techniques. Uses CUSUM/T-tests for labelling and a self-organizing map for classification.

King George Mini Storage Web Designer; 2014
Created the splash page for the Virginian storage company. (http://www.kinggeorgeministorage.com/)

COURSEWORK

Ordinary & Partial Differential Equations, Discrete Mathematics, Data Structures and Programming Techniques, Systems Programming and Computer Organization, Introduction to Databases, Numerical Methods I, Cryptography and Computer Security, Intelligent Robotics, Computational Vision and Biological Perception, Start-up Founder Studies, Deep Learning, Advanced Algorithms, Computational Learning Theory, Organizational Behavior, Bayesian Statistics, Linear Models

AWARDS AND HONORS

Research Awards; (2011-Present)
California State Bill of Recognition of Science Achievement, Siemens Semifinalist, Intel ISEF Finalist (3rd place), ACM Research Award, US Air Force Research Award, Sigma Xi Research Award, SDSC Research Award, Human Factors Research Award, Sigma Xi Fellow, ACM Student Member

Hackathon Awards; (2013-Present)
Dropbox API 1st place Award (2014), HackMIT Top 8 (2014), Featured TechCrunch Article (2013)

Conferences / Other; (2012-Present)
MIT SOLVE rapporteur (2015), XSEDE Presenter & Best Student Poster Award (2012-13), CISSE Presenter (2012), Qualcomm Education Scholarship (2013), Yale Technology Summit Organizer (2014), Intel Capital Showcase Presenter (2012)