

nicolasfishman

contact

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programming

C++, Java, Python
Matlab, R
Javascript, PHP
CSS3 & HTML5
MySQL, MongoDB

languages

bilingual
spanish/english

interests

machine learning, bioinformatics, cryptography, privacy

education

- since 2017 **Computer Science and Bioengineering Major** Stanford University, Stanford, CA
Focusing on machine learning applications in genetic engineering.
- 2016 - 2017 **Classes in Computer Science** George Washington University, Washington, DC
Cryptography with Prof. Valerie Nelson, Grade Earned: A
Bioinformatics with Prof. Keith Cranston, Grade Earned: A
Machine Learning with Prof. Claire Monteleoni, Grade Earned: A
- 2015 - 2016 **Classes in Mathematics** Stanford University, Stanford, CA
Multivar. Integral Calc. with Prof. Margarita Kanarsky, Grade Earned: A
Multivar. Differential Calc. with Prof. Margarita Kanarsky, Grade Earned: A
- 2013 - 2017 **High School Diploma** Woodrow Wilson High School, Washington, DC
GPA: 4.5
Science, Mathematics and Technology Scholar of Excellence,
Information Technology Student

experience

- since 2018 **Technical Specialist** Star Lab Corporation
Building system to provide early-warning of malicious, undocumented cyber activity targeting combat systems using a heuristic-based anomaly detection approach. Using deep learning to filter results to remove false positives which erode operator trust.
- since 2018 **Senior Advisor** Data for Progress
Using Deep Learning models to do text analysis, primarily word2vec models to analyze and compare bias in Twitter datasets and across news organizations.
- since 2017 **Undergraduate Researcher** Kundaje Lab, Stanford Medical School
Architecting and training deep neural networks on yeast MPRA data and working to interpret those models to develop more sophisticated physical understandings of transcription factor binding and regulatory sequence function.
- 2017 **Technical Specialist** Star Lab Corporation
Developing game theory and machine learning models to research how to defend and attack embedded systems.
- 2016 - 2017 **Research Fellow** Comparative Genomics Section, National Institutes of Health
Storage and analysis of structural variants, continued work on DOGSV. Prostate cancer tumor classification from variant statistics. Determining if tumors are BRCA1, BRCA2, or FASTA, among other types, based on frequency and ratios of both single nucleotide and structural variations.

- 2016 **IRTA Intern** Comparative Genomics Branch, NHGRI/ NIH
Responsible for designing and implementing a database framework to facilitate access and analysis of structural variants, originally only for internal lab use, currently in the process of becoming a public resource. See DOGSV
- 2016 - 2017 **Founder** Science Olympiad Team, Woodrow Wilson High School
Connected available funding and available expertise to expand opportunity.
- 2016 - 2017 **President** National Honor Society, Woodrow Wilson High School
Providing tutoring and organizing community service projects.
- 2015 - 2017 **President** FIRST Robotics Team 2914, Woodrow Wilson High School
Managing a budget of \$20,000, applying for 6 grants, totaling over \$10,000 dollars to pay for team equipment and travel.
- 2015 - 2016 **Tutor** Georgetown University, George Washington University
Advanced Mathematics and Computer Science, all students received A's or B's on final exams.
- 2014 - 2015 **Localization Developer** Open Medical Record System
Facilitating ease of translation across a large medical record system.
- 2014 - 2017 **Lead Programmer** FIRST Robotics Team 2914, Woodrow Wilson High School
Overseeing robot code development, creation of Python based vision system in 2014, development of working Kalman filter for robot location tracking in 2015 and 2016. Prediction using neural networks of FRC games in 2016 and 2017.
- 2014 - 2017 **Web Developer** The Wilson Beacon, Woodrow Wilson High School
Website redesign and performance improvements. thewilsonbeacon.com

projects

- 2017 **Fleeing from Terror** Stanford University
Won CS 109 competition for developing a way to make public spaces safer. Outlined a methodology for evaluating a room on the basis of safety, using the time for a room to evacuate in the case of a sudden terrifying event as our metric of safety. Also developed a way to optimize the design of a room for safety, and proposed a regulatory framework for ensuring new construction is safe.
- 2016 - 2017 **DOGSV** Comparative Genomics Branch, National Institutes of Health
Built database for the storage and analysis of hundreds of millions of structural variants. Trained model to cluster variants and assess the likelihood of variants being false positives.
- 2017 **Predict Population Diversity from Unassembled Reads** GWU
Developed model to estimate the genetic diversity of viruses with high rates of nucleotide substitution, using a nearest neighbor regression on k-mer analyses of the raw reads.
- 2017 **Predict Outcomes in Fantasy Baseball** George Washington University
Developed model to predict outcomes in fantasy baseball by building a dataset of MLB player histories, and then proving the validity of using player histories to predict team outcomes.
- 2016 **Legal Aid Dashboard** Drupal Legal Aid
Using Google web traffic data for various legal aid websites, classified the topics of the most popular web pages by location to facilitate allocation of legal aid resources to meet need.

honors

- 2018 **Boothe Prize Finalist, Program in Writing and Rhetoric** Stanford University
The Boothe Prize recognizes and rewards outstanding expository and argumentative writing by first-year students in the Writing and Rhetoric and Thinking Matters Programs.
- 2018 **Boothe Prize Finalist, Thinking Matters** Stanford University
The Boothe Prize recognizes and rewards outstanding expository and argumentative writing by first-year students in the Writing and Rhetoric and Thinking Matters Programs.
- 2017 **G.R.E.A.T. Award** NHGRI, National Institutes of Health
The Genome Recognition of Employee Accomplishments and Talents (G.R.E.A.T) Award, given for work in the Ostrander lab on the DOGSV system for storing and analyzing structural variants.
- 2017 **National AP Scholar** The College Board
For earning an average score of at least 4 on all AP Exams taken, and scores of 4 or higher on eight or more of these exams.
- 2017 **Science Fair First Place Winner** Woodrow Wilson High School
Top prize in school wide science fair for machine learning applications in predicting population diversity from genomic kmer analysis.
- 2016 **Science, Mathematics, and Technology Scholar** Woodrow Wilson High School
For the completion of the requisite courses and the completion of a final project.
- 2016 **National Hispanic Recognition Program** The College Board
Awarded to the top performing hispanic high school students.
- 2016 **Judges' Award** FIRST Robotics
For mentorship and tutoring programs developed in 2016.
- 2014 **Innovation and Control Award** FIRST Robotics
For a vision processing system written in Python.
- 2013 **Honor Roll** Woodrow Wilson High School
For receiving a GPA over 3.0. Earned every semester.

service

- 2015 - 2017 **National Honor Society** Woodrow Wilson High School
Mathematics, history, English, computer science and physics tutoring.
- 2014 - 2017 **Invasive Species Management** Rock Creek Conservancy
Certified volunteer leader for the Rock Creek Conservancy and National Park Service.
- 2013 **IT Instructor** Dominican Republic
Designing and teaching a curriculum focussed on teaching foundational IT skills: how to use email, Microsoft Word, Google for communications and research. Taught in Spanish.

publications

published articles

- Fleeing from Terror: Considering Safety When Designing Public Spaces in the Age of Mass Murder
Nicolas Fishman
Stanford Journal of Public Health 7.1 (2018). Stanford University, 2018

research reports

Denoising ATAC-seq with Convolutional Neural Networks

Nicolas Fishman, Sarah Gurev

CS230 Final Presentation, 2018

Demonstrating Prediction Equivalence in Historical Team and Player Statistics

Nicolas Fishman, Rui Tang, Rui Lui

CS4331 Final Presentation, 2016

presentations

Using k-mer counts to Predict Population Diversity from Unassembled Reads

Nicolas Fishman, Keylie Gibson, Matthew Bendall

2017

DOGSV: A Relational Database for the Storage and Analysis of Structural Variants

Nicolas Fishman

2016