

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

- 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 propose 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

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

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

research reports

Demonstrating Prediction Equivalence in Historical Team and Player Statistics

Nicolas Fishman, Rui Tang, Rui Lui

Machine Learning Final Presentation, 2016