Lillian Kay Petersen

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EDUCATION

HARVARD UNIVERSITY Class of 2024: Applied Math to Molecular Bio
Systems Programming and Machine Organization
Vector Calculus and Linear Algebra I
Cellular Biology and Molecular Medicine

LOS ALAMOS HIGH SCHOOL Cum. Unweighted GPA: 4.0

HONORS

Regeneron STS First Place • Cameron Impact Scholar • Three ISEF Placements • ACM Cutler-Bell • LANL Gold

PROGRAMMING SKILLS

Python • C++ • R • Sytems Programming • Machine Learning • LaTeX • git • unix • vim • Google Cloud Computing

EXPERIENCE

BROAD INSTITUTE | Internship: Genetics of Complex Traits
2020 | Cambridge, Massachusetts
Computed the full eigenvalue decomposition of the genotype matrices of 500,000 people in the UK to detect population structure and create better preprocessing algorithms for genome wide association studies.

SALK | Internship: Predicting Enhancer-Gene Connections
2019 | San Diego, California
Created a model to predict enhancer-promoter connections in eukaryotic genomes based on enhancer activity (ATAC-seq) and their interaction frequency (HiC), and used it to predict gene expression (RNA-seq). I then applied this model to study oncogene activation in Leukemia patients.

IIASA | Internship: Estimating poverty in Africa with machine learning
2018 | Vienna, Austria
My partner Garyk Brixi and I used machine learning to predict malnutrition prevalence at a high resolution across sub-Saharan based on developmental and economic indicators. I then created a tool to optimize production and distribution decisions of acute malnutrition treatment as a capacitated facility location model.

DESCARTES LABS | Mentorship in remote sensing and data analysis
2017 | Los Alamos, NM
Created an early warning system to predict crop yields in every country in Africa 3–4 months before the harvest using satellite imagery. I processed 15 terabytes of daily satellite imagery, conducted a thorough validation, and have presented this work around the world [peer-reviewed publication].

INDEPENDENT RESEARCH | Climate Change and Crop Yields
2016 | Los Alamos, NM
Predicted crop yields to 2100 for every US county for three crops and two future climate scenarios, based on historical relationships between yields and heat extremes [peer-reviewed publication].

INVITED TALKS

CGIAR Data in a Crisis Climate | Panelist | July 2020
CGIAR Big Data | Oral Presenter | October 2019 & 2018
FEWS NET | Hour Seminar | December 2018
Geo4Dev | Oral Presenter | November 2018
IFPRI | Brown Bag Seminar | May 2018
Planet | Hour Seminar | August 2020
AGU | Invited Oral Presenter | December 2018
USAID | Hour Seminar | November 2018
USDA | Hour Seminar | May 2018
GEOGLAM | Hour Seminar | May 2018

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Publons: https://publons.com/researcher/1642637/lillian-kay-petersen/