

# Lillian Kay Petersen

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## EDUCATION

### LOS ALAMOS HIGH SCHOOL

Los Alamos, New Mexico

#### SENIOR

Cum. Unweighted GPA: 4.0

Cum. Weighted GPA: 4.23

## SKILLS

### PROGRAMMING

Python • R •  $\text{\LaTeX}$

Github • Unix • vim

Google cloud computing

### LANGUAGE

German (AP class + immersion)

## COMMUNITY

### SCIENCE OUTREACH

Speaker for 7th grade classes,  
environmental centers,  
and other community  
organizations.

Elementary science fair judge.

Peer review scientific papers.

### YOUTH

Violin teacher for children

Extensive work with foster  
and adopted children

## INTERESTS

### MUSIC

Violin • Bavarian zither  
Orchestra

### SPORTS

Cross Country • Track

Skiing • Racquetball

### CLUBS

Eco Club (President)

Science Bowl

National Honors Society

Mu Alpha Theta (Math Honors  
Society)

## EXPERIENCE

### SALK | INTERNSHIP: ANALYZING GENETIC MUTATIONS IN LEUKEMIA PATIENTS

2019 | San Diego, California

### IIASA | INTERNSHIP: ESTIMATING POVERTY IN AFRICA WITH MACHINE LEARNING

Summer 2018 | Vienna, Austria

### DESCARTES LABS | MENTORSHIP IN REMOTE SENSING AND DATA ANALYSIS

2017 | Los Alamos, NM

### JAHN RESEARCH GROUP | GROUP MEMBER: [LINK](#)

UW-Madison

## RESEARCH

### ACTIVITY-BY-CONTACT MODEL TO PREDICT ENHANCER-GENE CONNECTIONS

Salk (McVicker's Lab) 2019  
Created an Activity-by-Contact model of gene activation based on the 3D structure of the genome, then applied this model to study oncogene activation in Leukemia patients.

### A NOVEL COMPUTATIONAL TOOL TO INFORM COST-EFFECTIVE NUTRITION INTERVENTIONS IN SUB-SAHARAN AFRICA

2018 – 2019  
Predicted prevalence of malnutrition, developed novel specialized nutritious foods, and optimized a supply chain for malnutrition treatments to support sustainable development.  
Intel International Science and Engineering Fair (ISEF) 3rd Place in category  
Intel ISEF: 3 special awards for development, teamwork, and applicability

### PREDICTING FOOD SHORTAGES IN AFRICA FROM SATELLITE IMAGERY

2017 – 2018  
Created an early warning system to predict crop yields in every country in Africa 3–4 months before the harvest using satellite imagery.  
Intel ISEF 1st Place in category  
Intel ISEF: USAID special award for development  
National Junior Science and Humanities Symposium (JSHS) 1st Place in category

### AMERICA'S FARMING FUTURE: THE IMPACT OF CLIMATE CHANGE ON CROP YIELDS

2016 – 2017  
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.  
Intel ISEF 3rd Place in category  
National JSHS finalist

### DETECTING CLIMATE CHANGE THROUGH MEANS AND EXTREMES

2015 – 2016  
Detected how the climate is changing in temp. and precip. means and extremes since 1950 for every weather station in the world, shown on an interactive map : ([link](#)).

### WILL IT BE A GOOD SKI SEASON? CORRELATIONS BETWEEN EL NINO AND SNOWFALL

2014 – 2015  
Analyzed correlations between El Nino and winter weather across the U.S. in order to predict the following winter's weather.

## PUBLICATIONS

Petersen, L.K. Real-Time Prediction of Crop Yields From MODIS Relative Vegetation Health: A Continent-Wide Analysis of Africa. *Remote Sensing*. 2018, 10, 1726.

Petersen, L.K. Impact of Climate Change on Twenty-First Century Crop Yields in the U.S. *Climate*. 2019, 10, 1726.

Petersen, L.K. Detecting Climate Change through Means and Extremes. *New Mexico Academy of Science*. 2016, 50, 26–46.

Petersen, L.K. Will it be a Good Ski Season? Correlation between El Nino and U.S. Weather. *New Mexico Academy of Science*. 2015, 49, 103–118.

## INVITED TALKS

CGIAR Big Data Convention | Oral Presenter | Hyderabad, India, October 2019

Los Alamos National Labs | Seminar | Los Alamos, NM, May 2018

AGU | Invited Oral Presenter | Washington DC, December 2018

FEWS NET | Hour Seminar | Washington DC, December 2018

USAID | Hour Seminar | Washington DC, November 2018

Geo4Dev | Oral Presenter | San Francisco, November 2018

CGIAR Big Data Convention | Oral Presenter | Nairobi, Kenya, October 2018

Burney Research Group | Hour Seminar | UCSD, August 2018

USDA NASS | Hour Seminar | Washington DC, May 2018

IFPRI | Brown Bag Seminar | Washington DC, May 2018

GEOGLAM | Hour Seminar | UMD, May 2018