




# DANIEL ZHAO

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## EXPERIENCE

### Deep Learning Intern


**NASA Jet Propulsion Laboratory, Science Data Modeling and Computing Group**

 June 2021 – August 2021    La Cañada Flintridge, CA

- Designed fast convolutional neural networks in the frequency domain to speed up texture segmentation of 56 TB Mars images by over 10 times.

### Research Assistant

**California Institute of Technology, Yuk Yung Planetary Sciences Lab**

 June 2019 – Sept 2020    Pasadena, CA

- Developed algorithm to compute structural similarities between minerals and biological ligands for informatic astrobiology.
- Discovered potential planet-mass stellar-metallicity relationship using data from Kepler Space Telescope and Transiting Exoplanet Survey Satellite.

### Machine Learning Intern

**University of Southern California, Lin Chen Biomolecular Sciences Lab**

 May 2018 – December 2020    Los Angeles, CA

- Built interpretable machine learning models predicting the regulatory interactions of gene clusters in six human cell lines.
- Performed cluster analysis of key structural proteins and genomic loci.

## SELECTED PUBLICATIONS

### Journal Articles

- Zhao, D., Bartlett, S., & Yung, Y. (2020). Quantifying mineral-ligand structural similarities: Bridging the geological world of minerals with the biological world of enzymes. *Life*, 10, 338.
- Jiang, J., Zhao, D., Ji, X., Xie, B., & Fahy, K. (2021). Revisiting the planet mass and stellar metallicity relation for low-mass exoplanets orbiting gkm class stars. *Universe*, 7, 88.
- Fan, S., Zhao, D., Li, C., Shemansky, D., Liang, M.-C., & Yung, Y. (2021). Seasonal variations of chemical species in titan's upper atmosphere. *The Planetary Science Journal*, accepted with minor revisions.
- Chen, B., Kou, Y., Zhao, D., Wu, F., Liu, S., Chia, A., & Wang, L. (2020). Calculation on stopping time and return period. *Natural Hazards*, 101, 537–550.

### Conferences & Presentations

- Zhao, D., & Kou, Y. (2020). Analyzing genomic features with predictive chromatin interaction models: A comprehensive evaluation. *IEEE conference on bioinformatics and computational biology 2020*.
- Pearson, K., Altinok, A., Zhao, D., & Noe, E. (2021). Mapping “brain coral” regions on mars using deep learning. *American geophysical union fall meeting 2021*.

## SKILLS

Python   Java   C++   Git  
R   AWS/GCP   Tensorflow  
PyTorch   Linux

Deep Learning/ML   Algorithms  
Statistical Analysis   Research  
Quantitative Reasoning

## EDUCATION

### A.B. Mathematics

**Harvard College**

 Sept 2020 – Expected May 2024

GPA: 3.97

Core Coursework: Statistical Inference (A), Algorithms (A), Real Analysis (A), Number Theory (A)

### Diploma

**La Canada High School**

 Sept 2016 – May 2020

GPA: 4.66 (weighted), 3.98 (un-weighted)

ACT: 36/36 | PSAT: 1510/1520

## HONORS

### Qualifier

**USA Junior Math Olympiad**

 April 2018

### Five-time Qualifier

**American Invitational Math Exam**

 March 2016 – March 2020

## INTERESTS

Chess Theory   Soccer  
Track & Field   Cello  
Classic Rock   Poker Strategy