

# ADAM GUO

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## EDUCATION

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### Pomona College

B.A. in **Computer Science and Mathematics (double major)** — GPA 3.98

Member of Phi Beta Kappa

Teaching assistant for Discrete Math and Func. Programming, Theory of Computation, and Advanced Linear Algebra

Advanced coursework includes Computer Vision, Natural Language Processing, Mathematics of Big Data

May 2022

Claremont, CA

## EXPERIENCE

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### Associated Students of Pomona College ([pomonastudents.org](http://pomonastudents.org), [GitHub](#))

*Lead Web Developer*

Sep 2018 – Present

Claremont, CA

- Led development of student body resources website, used by **over 2,000 students**
- Managed team of 3 developers by coordinating tasks, reviewing code, and leading the creation of new features
- Built new features from front-end to back-end (**HTML/ERB/CSS, Ruby on Rails, PostgreSQL**) including a housing review portal, a rideshare coordination website, and a WYSIWYG custom page editor for use by non-technical staff
- Responsible for **Linux server administration** using Docker and Capistrano, and implemented uptime monitoring and automated log pruning

### Claremont Graduate University Institute of Mathematical Sciences ([GitHub](#), [GitHub](#))

*Research Assistant*

May 2019 – Present

Claremont, CA

- Implemented algorithms in **Python** and **Julia** for computing orthogonal polynomials, inverse Laplace transforms, and high resolution signal separation
- Created a signal classification algorithm using ARMA modeling, outperforming literature on **EEG classification (99.8% vs. 97.1%)**

### Stony Brook University 3D Scanning Lab

*Research Assistant*

Jun 2021 – Aug 2021

Stony Brook, NY

- Developed **C++** implementations for algorithms in stereo camera calibration, point cloud registration and mesh construction, and computing harmonic/conformal mappings between manifolds
- Pre-processed facial scan data using **MeshLab** for geometric analysis

## PROJECTS

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### Manifold Learning Approach for Gesture Recognition ([arxiv.org](https://arxiv.org))

Feb 2021 – Jan 2022

- Created and implemented an SVM-based classification algorithm in **Python** using a novel high-degree localized kernel on an unknown manifold, with proven theoretical bounds on error
- Implemented an efficient solver in Python for high-degree Hermite functions to compute said kernel
- Developed the classifier within the **Scikit-learn** framework for ease of deployment and modularity
- Outperformed state-of-the-art convolutional neural network-based classifiers in both accuracy and runtime (**96% vs. 92%**)
- Results submitted for **publication in Neural Networks**

### Geometrically Unified Facial Recognition Pipeline ([Google Slides](#))

Jan 2020 – May 2020

- Developed a two-stage facial recognition algorithm using a **convolutional neural network** for eyes/nose/mouth and a **Gaussian mixture model** for facial shape (obtained using **dlib**)
- Reduced training and inference times by **50%** while preserving similar accuracy

## TECHNICAL SKILLS

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### Programming Languages

Python, Java, Ruby, JavaScript, HTML/CSS, SQL, C++, Rust, Julia, Haskell

### Web Frameworks

Ruby on Rails, Node.js, Angular.js

### Machine Learning

Scikit-learn, OpenCV, Tensorflow, Numpy, Pandas

### Tools

Git, Docker, Linux, L<sup>A</sup>T<sub>E</sub>X

## HOBBIES

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Ask me about Linux distributions, video games, brewing coffee, indie pop, or cycling!