

TIMOTHY SHEN

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Education

University of California, Davis

Bachelor of Science in Statistics
Minors in Computer Science and Mathematics

March 2024

Davis, CA

GPA: 3.86/4

Dean's List, Winter Quarter 2022, Spring Quarter 2023

Research Experience

Statistics Research Intern

May 2023 – December 2023

Immucor, Inc.

Mountain View, CA

- Developed a detection model for Human Leukocyte Antigen (HLA) Loss to identify post-stem cell transplant relapses.
- Researched, implemented, and rigorously tested a variety of statistical tests and sampling techniques to assess the quality and accuracy of HLA Loss of Heterozygosity detection model.
- Performed experimental designs to validate HLA Loss detection model under different real-world cases.
- Effectively communicated progress and findings to the research team and client lab centers through comprehensive presentations and reports, fostering collaboration in the project.

Under Supervision of Dr. Ming Li, Vice President of Bioinformatics & Head of Next Generation Sequencing (NGS) Software

Undergraduate Researcher

May 2021 – December 2022

Stanford Genome Technology Center (SGTC)

Palo Alto, CA

- Modified an analytic software to work better for biostatisticians through the development of R packages and R Shiny that improved research and collaboration.
- Analyzed the relationship between the presence of fourteen metal types in Chronic Fatigue Syndrome (CFS) patients and control patients.
- Constructed UI/UX improvements in their database that resulted in an increase in user interaction with the data center.

Under Supervision of Dr. Wenzhong Xiao, Professor of Harvard Medical & Dr. Chia Jung Chang, Professor at SGTC

Research Assistant

August 2019 – September 2020

Harvard Medical School and Massachusetts General Hospital (MGH)

Boston, MA

- Aided in processing over 100 files of medical research-related data (i.e. de-identification, scientific data formatting, and data sharing) to their data servers and unified their data entries through RedCap and Excel.
- Tested questionnaires and surveys for Chronic Fatigue Syndrome patients to improve the ease of user and researcher interaction.
- Designed a website to showcase all seven of their projects to improve communication among other researchers.

Under Supervision of Dr. Wenzhong Xiao, Professor of Harvard Medical & Dr. Li-Yuan Hung, Research Scientist at MGH

Relevant Projects

Detecting Loss of Heterozygosity in Human Leukocyte Antigens

December 2023

Immucor, Inc | Skills: Python, Study Design, Stat Learning, Classification

- Developed an analytical algorithm designed to identify Loss of Heterozygosity (LOH) in the Human Leukocyte Antigen (HLA) post stem cell transplantation.
- Conduct in-depth exploratory data analyses and employ hypothesis testing and bootstrapping to elucidate the nuanced behavior of allele frequencies within diverse contexts, enabling precise detection algorithms.
- Actively design and conduct experimental studies to validate and refine working models, contributing to the validation and optimization of the analytical software for real-world clinical applications.

Predicting Student Dropouts in Higher Education

March 2023

Course: Big Data & Advanced Statistical Computing | Skills: Python, Stat Learning, Simulation Study

- Established a proof-of-concept classification model for predicting student dropouts in higher education.
- Employed Gradient Descent and Newton's Method for efficient computational speed, particularly with significantly large datasets for logistic regression

Analysis of Housing Trend in Major Metro Areas

December 2022

Course: Big Data & Web Technologies | Skills: Python, Stat Learning, Web-scraping APIs

- Web-scraped via Python over 5000 houses in metro areas listed on Zillow

- Gathered and processed neighborhood statistic data through undocumented APIs
- Designed data visualizations and analysis through Python's packages to investigate trends within the relationship between housing prices and neighborhoods.

Identifying Factors of a Successful Disney Movie

June 2022

Course: *Statistical Learning* | Skills: R, Stat Learning

- Processed over 3000 Disney Films and TV Shows through Kaggle and R.
- Deciphered datasets via R and applied statistical learning (like regression analysis, PCA, diagnostic testing) to identify what factors impact the success of Disney Films.

Community Outreach Experience

Math Coach

November 2021 – June 2023

Mathnasium Learning Center

Davis, CA

- Tutored K-12 math students in topics ranging from elementary math to calculus
- Improved 13 students' overall performance in their corresponding math classes
- Evaluated over 50 students' styles of learning and adapted my teaching techniques to improve their understanding of math topics.

Augmented Reality Instructor

June 2022 – August 2022

Integem, Inc.

Union City, CA

- Planned and led activity programs for over 200 students in learning Machine Learning, and holographic Augment Reality.
- Taught 10-15 high school students per week the use of Python, Adobe Animator, and Raspberry Pi.
- Collaborated with a team of four peers in creating an educational and safe environment for students.

Children's Program Leader

June 2016 – June 2019

Kaleo Missions

San Diego, CA

- Organized and instructed an after school program for Syrian refugee children in need of after school care.
- Aided the lower-income communities by connecting them with local outreach programs (thrift stores, homeless shelters, park cleaning).
- Mentored a team of 5 in planning events that raised the morale of our mission team of 30 people.

Other Work Experience

Reader

October 2023 – Present

Department of Statistics, University of California, Davis

Davis, CA

- Grade weekly course assignments for 300+ students enrolled in STA 100: Applied Statistics for Biological Sciences, STA 131B: Mathematical Statistics, and STA 106: Analysis of Variance
- Post course grades routinely

Relevant Coursework

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|---------------------------|----------------------------|------------------------|-------------------|
| • Mathematical Statistics | • Supervised Learning | • Analysis of Variance | • Number Theory |
| • Probability Theory | • Bayesian Statistics | • Regression Analysis | • Computer Vision |
| • Real Analysis* | • Big Data Technologies | • Discrete Mathematics | |
| • Applied Linear Algebra | • Adv. Stat. Computing | • Algorithm Design | |
| • Unsupervised Learning | • Statistical Data Science | • Abstract Mathematics | |

* *Current Coursework*

Awards

Prized Writing | University of California, Davis

2023

"Empowering the Underprivileged: How Machine Learning is Revolutionizing Humanitarian Assistance in Low-Income Countries"

- Annual juried competition that recognizes outstanding undergraduate writing at UC Davis
- Selects around 20 pieces from over 400 entries by undergraduate students in non-creative writing courses.

Technical Skills

Statistical Analysis Software: R Studio, R Shiny, SAS, JASP

Programming Language: R, Python, C#, SQL (Intermediate), MATLAB (Intermediate)

Other Software: Git/Github, Microsoft Office Suite (Excel, Powerpoint, etc.), QT, Docker, CKAN, Apache, Tensorflow