

KEVIN MIAO



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Education

University of California, Berkeley | *M.S. Electrical Engineering and Computer Science* **May 2022**
Advisor: Dr. J. Gonzalez *GPA:* 4.0

Emphasis: Deep Learning, Computer Vision, Explainable Artificial Intelligence

University of California, Berkeley | *B.A. Computer Science* **May 2021**
Extracurriculars: Data Science Society at Berkeley, California Lightweight Rowing *GPA:* 3.86

Professional Experience

Apple **Aug 2022 – Present**
Machine Learning Engineer *Cupertino, CA*

- At Apple, I am working on solutions for data management and research tools to support the development of machine learning and computer vision algorithms. Please contact me if you have any questions about my work.

Felyx Ride Sharing **Jun 2021 – Aug 2021**
Jr. Backend/Machine Learning Engineering Intern *Amsterdam, The Netherlands*

- Led end-to-end development of deep learning pipeline, detecting wrongly parked eMopeds, which resulted into effective models (99% mAP).
- Deployed model in GoLang Backend Architecture and iOS App (CoreML) with more than 500,000 users in five European countries.
- Reducing nuisance complaints by 30%, which attracted attention from national news outlets.

monday.com **Aug 2020 – Dec 2020**
Machine Learning Consultant *New York City, NY*

- Oversaw production of forecasting and regression models to increase the retention of education users on the platform.
- Selected architecture for models to classify viability of marketing opportunities given 100+ predictors (0.05 RMSE).

PayPal **Aug 2019 – Dec 2019**
Data Science Consultant *San Jose, CA*

- Proposed data-driven, statistically corroborated recommendations leading to increased employee engagement (40%).
- Conducted natural language processing to automate inference and monitoring of employee satisfaction.

Academic Experience

Computation, Data Science, and Society, UC Berkeley **May 2022 – Aug 2022**
Lecturer in Summer Sessions *Berkeley, CA*

- Instructed and prepared daily lectures to 550 Data Science undergraduate and graduate students with high final evaluation scores (6.12/7).
- Updated course curriculum to include engineering-based perspectives on Data Science and Machine learning.

Berkeley AI Research Lab, UC Berkeley **Oct 2021 – May 2022**
Graduate Student *Berkeley, CA*

- Creating self-supervised models for interpretable representation learning using Vision-Transformers.
- Training and interpreting efficient and robust pre-training models for non-object centric classification, object detection and segmentation.

Real-time Intelligent Secure Explainable Systems Lab, UC Berkeley **Sep 2020 – May 2022**
Graduate Student *Berkeley, CA*

- Developing novel attention mechanisms for deep learning architecture through the incorporation of weak-supervised attention.
- Fine-tuning segmentation and classification models for automated medical diagnoses using PyTorch and Weights-and-Biases, outperforming other SOTA models with a comparable number of parameters (89% AUC).

Hong Lab, UCSF Bakar Computational Health Sciences Institute **Jan 2020 – May 2021**
Biomedical Data Science Researcher *San Francisco, CA*

- Streamlined data engineering pipeline for electronic health records stored in hospital cloud systems using Apache Spark.
- Published paper on training highly discriminatory machine learning models to identify high-risk cancer patients (82% AUC).

- Deployed model for clinical trials at Duke University and UCSF to decrease emergency room loads in a system of 300,000 patients.

Whiteman Lab, UC Berkeley

Jun 2018 – Dec 2019

Bioinformatics Research Assistant

Berkeley, CA

- Performed computational genome analysis of divergent clades to identify common ancestral relationship.
- Applied dimensionality reduction algorithms on collected data to extract important key insights.

Teaching Experience

Data 198-003: Data Science Research Seminar for Undergraduates

Aug 2021 – May 2022

Lead Instructor & Curriculum Developer

Berkeley, CA

- Lecturing weekly seminars, writing course materials and mentoring a group of fifteen underrepresented minority students in data science research.

Data 8: Foundations of Data Science

Jan 2019 – May 2022

Teaching Assistant

Berkeley, CA

- Holding weekly discussions, lab sections, and office hours, achieving high student satisfaction (4.8/5.0).

CS61BL: Data Structures

Jun 2020 – Sep 2020

Course Tutor

Berkeley, CA

- Facilitated homework review sessions, biweekly quizzes, and the midterm exam. Answered students' conceptual questions and helped them debugging coding assignments.

Biology 1B: General Biology

Aug 2018 – Dec 2018

Undergraduate Student Instructor

Berkeley, CA

- Instructed weekly 4-hour labs, created quizzes, and answered students' questions related to experiments.

Longfellow Middle School

Aug 2017 – Dec 2017

Student Teacher in Mathematics

Berkeley, CA

- Collaborated with local schools to roll out inquiry-based learning curriculums in middle school STEM courses. Taught 8th grade mathematics weekly.

Publications and Presentations

Publications

- (1) **Miao, K.**, Gokul, A., Singh, R., Petryk, S., Gonzalez, J., Keutzer, K., Darrell, T., & Reed, C.. (2022). Prior Knowledge-Guided Attention in Self-Supervised Vision Transformers.
- (2) **Miao, K.**, Friesner, I., Dahle, J., Yousefi, S., Buchake, B., Kaur, P., Odisho, A. Y., Cinar, P., & Hong, J. C. (2021). Machine learning-based approach to assessing risk of outpatient cancer treatment-related emergency care and hospitalizations.
- (3) Matsunaga, T., Reisenman, C. E., Goldman-Huertas, B., Brand, P., **Miao, K.**, Suzuki, H. C., ... & Whiteman, N. K. (2019). Evolution of olfactory receptors tuned to mustard oils in herbivorous *Drosophilidae*. *In Molecular Biology and Evolution*.

Conferences

- (1) **Miao, K.**, Dahle, J., Yousefi, S., Buchake, B., Kaur, P., Odisho, A. Y., Cinar, P., & Hong, J. C. (2021). Machine learning-based approach to the risk assessment of potentially preventable outpatient cancer treatment-related emergency care and hospitalizations. *In Journal of Clinical Oncology (Vol. 39, Issue 28-suppl, pp. 333–333). American Society of Clinical Oncology (ASCO)*.
- (2) **Miao, K.**, Singh, R., Petryk, S. & Gonzalez, J. (2021). Towards interpretable deep diagnoses: guiding chest X-ray models using spatial attention. (*RISE Retreat, Summer 2021*) & (*UC Berkeley EECS Research Fair, Fall 2021*).

Technical Strengths

Languages: Python, R, Java, C, HTML/CSS, SQL, Shell

Technologies/Frameworks: PyTorch, Numpy, Pandas, Scikit-Learn, Sci-Py, Scikit-Image, OpenCV, Flask, Linux, Git, Hadoop, Apache Spark, AWS, GCP

Awards and Honors

- 2021 **Distinction in General Scholarship**, UC Berkeley, College of Letters and Sciences
- 2019 **Coxswain of the Year**, California Lightweight Rowing
- 2017 **Debate Cup Champion**, Van Abbemuseum, Eindhoven, The Netherlands
- 2017 **Distinction (Biology, Chemistry)**, National Science Olympiad, Amersfoort, The Netherlands
- 2017 **Finalist**, Netherlands Latin Olympiad, The Hague, The Netherlands

Community Service and Other Activities

- 2021 – May 2022 **Project Mentor** Data Discovery Research Program, UC Berkeley, CA
- 2018 – May 2022 **SF Bay Area Ambassador**, Democrats 66, The Hague, The Netherlands
- 2019 – 2021 **Project Manager & Executive Member**, Data Science Society, Berkeley, CA
- 2018 **Volunteer**, Alta Bates Hospital, Berkeley, CA
- 2018 **Orientation Leader**, UC Berkeley, New Student Services, Berkeley, CA
- 2017 – 2021 **Student-Athlete, Vice-President**, California Lightweight Rowing, Berkeley, CA
- 2017 – 2018 **Member**, Global Environment Theme Program, Berkeley, CA