Zihan (Andy) Zhong

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Education

University of California, Berkeley   *Berkeley, CA*

SIMULTANEOUS DEGREES IN ECONOMICS$_{3.83}$, DATA SCIENCE$_{4.00}$, AND CHEMICAL BIOLOGY$_{3.00}$ *May 2021*

Relevant Coursework:

- Econ: Microeconomics, Macroeconomics, Economic Statistics and Econometrics, International Trade, Financial Economics, Financial and Behavioral Economics, Intermediate Financial Economics
- CS: Structure and Interpretation of Computer Programs, Data Structures and Algorithms, Artificial Intelligence
- Stats: Concepts of Probability and Statistics, Principles and Techniques of Data Science, Probability for Data Science, Data, Inference, and Decision
- Science: Quantitative Analysis, Organic and Inorganic Chemistry, Physical Chemistry and Laboratory, Chemical Biology, Macromolecular Synthesis and Cellular Function, Biochemistry and Molecular Biology Laboratory, Computational Chemistry, Ethics in Science and Engineering

Experience

Economics Department, University of California, Berkeley   *Berkeley, CA*

UNDERGRADUATE RESEARCH ASSISTANT, FACULTY ADVISOR: PROF. MARTHA OLNEY   *Jun. 2020 - PRESENT*

- Analyzed the diffusion of online misinformation in the developing countries (i.e. India), using network theory.
- Oversaw the construction of an online platform for conducting remote experiments using an integration of Qualtrics, Google API, and JavaScript.
- Maintained and refined the automated survey features to resemble a social media setting by A/B testing and evaluating responses.
- Created a sustainable framework for communication between survey and database, and also a pipeline to create/modify testing features.

Economics Department, University of California, Berkeley   *Berkeley, CA*

UNDERGRADUATE RESEARCH ASSISTANT, FACULTY ADVISORS: PROF. PATRICK KLINE AND PROF. CHRISTOPHER WALTERS   *Sep. 2019 - PRESENT*

- Participated in the largest and most comprehensive NBER funded correspondent audit study concerning job-level employment discrimination.
- Compiled and maintained web scrapers using Scrapy framework and web browser robots using Selenium framework.
- Added human interaction feature to counter CAPTCHA and developed reusable functions as an API for specific talent management backends.
- Piloted and led the project's effort for obtaining real world profiles and prepared data as training set for producing fictitious applicant profiles.

Yi Lab, MCDB Department, University of Colorado, Boulder   *Boulder, CO*

SUMMER RESEARCH INTERN, FACULTY ADVISOR: PROF. RUI YI (NOW AT NORTHWESTERN UNIVERSITY)   *May 2019 - Aug. 2019*

- Prepared a series of human p63 genes with different mutations in place to be used for lentiviral infection and CRISPR-Cas9 gene editing.
- Contributed significantly to the paper *Creating a Mouse Model of Human p63-related Ectodermal Dysplasia Using CRISPR-Cas9 Gene Editing*.
- Learned and practiced data analyses with high throughput biology methods like ChIP-seq and RNA-seq.
- Shadowed and implemented Two-photon Excitation Microscopy (TPEM) with Laser Confocal Scanning Microscopy (LCSM) to create real time three-dimensional film on live tissues.

Wang Lab, Biochemistry Department, University of North Carolina, Wilmington   *Wilmington, NC*

SUMMER RESEARCH INTERN, FACULTY ADVISOR: PROF. YING WANG   *May 2018 - Aug. 2018*

- Produced isotope-labeled recombinant whale myoglobin using cloning techniques involving PCR, transformation, and cell lysis.
- Crystalized recombinant protein sample and prepared it to be sent off to a national laboratory for 2D-NMR analysis.
- Compiled and sewed together a digital version of lab protocols with narrative and flow of the procedures.
- Practiced fast-flow peptide synthesis (FFPS) and developed an Excel sheet to automate calculation process.

Skills

Programming	Python, Java, JavaScript, SQL, R, Stata, Mathematica, Scheme
Frameworks	Scrapy, Selenium, Google API, Qualtrics Survey Engine, WordPress
Software	Photoshop, Premiere Pro, Lightroom, InDesign, LaTeX, Microsoft and Google Suites (Word, Excel, PowerPoint, etc.)
Language	Fluent in English and Mandarin Chinese, intermediate French

Projects

Bear Maps (Java & JavaScript)

- A web-browser based Google Maps clone only servicing Berkeley City with navigation and search functions. I mainly contributed to back-end implementation of the "smart" pieces of the map (e.g. map rastering, routing and location data, auto-complete and search, and turn by turn navigation).

Probabilistic Language Modeling (Python)

- A multi-class classification ML algorithm. Using N-gram probabilistic language modeling, I created a text generating algorithm which is capable of filling in words or sentences given context based on the training data. It is useful in recovering or correcting texts from documents or books.

AI Pac-Man (Python)

- Traditional Pac-Man played by an AI at a very high skill level using search and reinforcement learning algorithms.

Electronic Structure Calculation using PySCF

- Using PySCF computational package, potential energies of both benzene and its immediate derivative phenol were calculated. To derive their properties, I focused on bond stretching and bond rotation, and I investigated their effect on potential energy and molecular orbital.

Ham-Spam Email Classifier

- I built a binary classifier to classify spam emails from ham emails in real data sets. Using techniques of feature engineering and cross validation, I was able to achieve a final score of 0.9500 on the test data set in a Kaggle competition using my trained model.

Volatility Forecasting and Linear Factor Models In Equity Markets

- Using 1877 largest stocks by capitalization in the U.S. equity market, I explored different methods of building portfolios to track the market index. Then I used the Modern Portfolio Theory, the Market Model, and the Fama-French Model to forecast market volatility. In the end, I tested the CAPM and the three-factor Fama-French Model using random portfolio excess returns and comparing them to the model-predicted returns.

Extracurricular Activities

Berkeley Chinese Students and Scholars Association   *Berkeley, CA*

IT Department Member   *Sep. 2017 - PRESENT*

- Coordinate and support club-organized events with technology and other electronic equipment.
- General technological support: photo shoot, video editing, graphic design, etc.