ABHISHEK DEVARAJAN

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EDUCATION

University of California, Irvine *2018-2021*
B.S.: Mathematics, **Specialization**: Data Science
Undergraduate Research Fellow
Overall GPA: Magna Cum Laude (3.893/4.0)

EXPERIENCE

Duke University June 2021 - Present
Research Assitant: Data Science *Durham, NC*

- Worked under Dr. Astrid Giugni (Duke) and Dr. Jessica Hines (Birmingham Southern College)
- Applied Big Data techniques to a set of over 60,000 Medieval and Early Modern English texts in order to research the ethics of consumption from 1500-1660.
- Created an automated data cleaning pipeline in Python to scrape data from XML files, normalize medieval spelling variations, and condense texts into large csv files
- Utilized Python and R to perform LDA topic modeling, dictionary-based sentiment analysis, and Word2Vec word embeddings on texts to properly examine the contents of each text.
- Served as a team leader by contributing over 60% of the code written for this project
- Presented our findings to a pannel of Duke faculty members and data science industry leaders

UC Irvine Nov 2020 - Present
Research Assistant: Economics & Banking *Irvine, CA*

- Supervised by Professor Gary Richardson
- Digitized bank call reports from the 1900s using Python OCR algorithms as well as manual data entry.
- Used quantitative and qualitative methods to investigate the distribution and causes of bank failures throughout the 20th century.
- Developed a statistical model that uses PCA and Logistic Regression to predict bank failures during a financial crisis with over 90% precision.
- Wrote an academic paper (pending publication) and presented our findings to the Conference of State Bank Supervisors (CSBS).

UC Irvine Mar 2021 - Present
Research Assistant: Urban Studies & Social Ecology *Irvine, CA*

- Assisted with research led by Dr. Maura Allaire
- Cleaned and analyzed nearly 100 GB of housing data from Zillow in order to determine the distribution of home wastewater infrastructure throughout the United States.
- Utilized R and ArcGIS to create and analyze shapefiles of wastewater service areas by US state
- Constructed R scripts to automatically compare wastewater service areas to census block group data

UC Irvine Sep 2020 - June 2021
Reading Program: Mathematics *Irvine, CA*

- Worked under the guidance of a PhD student to learn about graduate level convex optimization.
- Read Prof. Stephen Boyd's monograph explaining the theory and applications behind the ADMM algorithm as well as distributed and parallel computing.
- Implemented algorithms such as the Method of Multipliers and ADMM in Python.

UC Irvine Mar 2021 - September 2021
Reading Program: Economics *Irvine, CA*

- Worked one-on-one with Professor Seth Pipkin to devise novel metrics of economic development in urban areas.
- Read through economic papers relating to social mobility and economic growth in cities.
- Highlighted specific techniques or study designs used by researchers to analyze social mobility

TECHNICAL STRENGTHS

Data Analysis	Python, R
Deep Learning & Optimization	Tensorflow, Numpy, Sklearn, Gensim
Data Visualization	Pandas, Matplotlib, Ggplot, Plotly
Databases	MySQL
Typesetting Document	Latex

AWARDS & ACCOMPLISHMENTS

MAC Hackathon January 2021
2nd Place *Irvine, CA*

· Utilized Python and Google Cloud Platform to perform exploratory data analysis on 15,000 social media posts regarding the Covid-19 pandemic.
· Outlined a prototype app to connect people with mental health services based on the sentiment of their posts.
· Won the "Best Idea/Innovation" award.

CSBS Data Analytics Competition (DAC) April 2021
1st Place *Virtual, USA*

· Created a statistical model to predict bank failures using call reports, risk scoping data from the Conference of State Bank Supervisors (CSBS), and macro-economic data from the Federal Reserve.
· Achieved an accuracy over 90% for predicting bank failures during times of economic crisis.
· Presented findings to a panel of federal and state banking officials.

UROP Fellowship June 2021
Research Grant *Irvine, CA*

· Drafted a formal research proposal outlining the details of the Urban Studies & Social Ecology project (see above).
· Received a research grant and a fellowship appointment from the UC Irvine Undergraduate Research Opportunities Program.
· Offered a speaking position at the 2022 Undergraduate Research Symposium.

AGU Fall Meeting December 2021
Research Conference *Virtual, Worldwide*

· Gained acceptance to one of the largest meetings of environmental scientists– i.e. the American Geophysical Union (AGU)
· Will be presenting methods used and results found in the Urban Studies & Social Ecology project to professors and industry leaders from around the globe.