

Nathaniel del Rosario

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EDUCATION

University of California, San Diego

La Jolla, CA

B.S. Data Science

2025

- Graduate: Computer Vision, Recommender Systems, Deep Learning
- Undergraduate: Principles & Techniques of Data Science, Geospatial Data Science, AB Testing, Statistics, Database Systems, Cloud Computing & Scalable Analytics, NLP, Data Visualization, Computational Neuroscience

University of California, Berkeley

Berkeley, CA

Visiting, Computer Science

2023

- Artificial Intelligence, Probabilistic Modeling & MDPs, Reinforcement Learning, Machine Learning, Algorithms

SKILLS

Python, Pandas, Dash/Plotly, Numpy, Scikit-learn, TensorFlow, PyTorch, Tensorflow, Cuda, Dask/Ray, SQL, PostgreSQL, D3 AWS, Google Cloud, Docker, Kubeflow, Spark, Databricks, OpenAI Gym, Distributed Systems, Github, Jira, ArcGIS

EXPERIENCE

Hacioglu Data Science Institute

April 2024 - Present

Undergraduate Researcher

La Jolla

- Researching & designing models to predict public transportation accessibility in New York City (RMSE of .1785)
- Utilizing machine learning methods to identify and predict crime hotspots in metropolitan areas supervised by Professor Wartell and Professor Zaslavsky

University of California, San Diego

September 2023 - March 2024

Undergraduate Student Instructor

La Jolla

- Beta Testing assignment and exam questions, hosting Office Hours for a data science course of over 500 students
- Updated deployment of course website using github pages & Docker supervised by under Suraj and Tiefenbruck
- Grading and hosting Office Hours for upper division data science course of over 700 students under Shannon Ellis

San Diego Supercomputer Center

June 2023 - September 2023

Machine Learning Engineer Intern

- Utilized AWS EC2, AWS S3, & PostgreSQL to allow user data queries and vectorized code to prune computations by 7%
- Designed Content Filtering Recommender System supporting 5+ user constraints for over 200,000 items
- Implemented an RL agent using SB3, non greedy Q-Learning to improve recommendation quality

Deloitte

February 2023 - June 2023

Data Science Apprentice

- Cleaned data w/ 3000+ features, 1 billion observations using Dask, vectorized Pandas to decrease cleaning runtime by 20%
- Leveraged XGBoost, Lasso to identify 850 significant features, predict drug use in young adults with 81% accuracy
- Tuned Hyperparameters, class weighting to improve F1 score from .35 to .70 and identify 10 highest risk demographics

Chan Zuckerberg Biohub

August 2022 - January 2023

Data Scientist

- Designed algorithms to compare across 30+ virus screens to yield insights in virus-host interactions
- Implemented 5+ UI/UX improvements to a database tool to promote intuitive workflow
- Wrote documentation for 23 functions from scratch and improved codebase readability

Chan Zuckerberg Biohub

June 2022 - August 2023

Data Science Intern

San Francisco

- Built & deployed 3 interactive dashboard visualizations of CRISPR screen comparisons using Dash/Plotly/Vercel
- Improved data processing of a Nextflow data pipeline (16,000,000 data points) to minimize runtime when traversing by 10%
- Created 6 new visualization and analysis methods for genome comparisons between 20,000 genes

PROJECTS & LEADERSHIP

Seq2Seq Language Translation — PyTorch, Google T5 Model

- Fine tuned Google T5 on English to Mandarin text translation, increasing robustness (BLEU score of 15)
- Developed Custom training pipeline from HuggingFace dataset retrieval for English to Mandarin translation task

Exploring CNN Architecture for Semantic Segmentation — PyTorch, OpenCV

- Implemented different UNet architectures with AdamW Optimization, Data Augmentation, weighted cross entropy loss, learning rate scheduling to improve IoU score from .055 to .071 and pixel accuracy from 73.4% to 75.1%
- Utilized FCN ResNet-101 for transfer learning further improving IoU score to .33 and validation accuracy to 87.3%

Spotify User Persona Clustering — SpotiPy, Scikit-Learn

- Wrote an automated pipeline using SpotiPy, Spotify API to scrape, preprocess, feature engineer the data
- Performed PCA and K-Means to identify 6 unique listening personas for identifying target audiences

Data Science Society

October 2023 - Present

Projects Director

- Sourcing and mentoring 12 data science projects during the academic year