Abhinav Madahar

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Education

BS in Computer Science and Mathematics (double major)
Rutgers University–New Brunswick
September 2017 – May 2021

Research in industry

Johnson & Johnson — April 2020 — September 2020
Data Science Co-op — Titusville, New Jersey
Mentor: Walter Cedeño, PhD

- Developed the first machine learning model to reliably detect glaucoma in a patient without a retinal scan
- Achieved 81% accuracy, 85% sensitivity, and 75% specificity on a data set where half the patients had glaucoma
- Used data consisting of disease diagnoses, drug usage, medical device usage, and more
- Helped prepare patent application for the model

Oracle — May 2019 — August 2019
Data Science Intern — Santa Clara, California
Mentor: Dorian Puleri, PhD

- Developed autoregressive time series model to predict cloud server traffic
- Used an RNN- and CNN-based sequence-to-sequence model, which was able to make more nuanced forecasts than predecessor models
- Evaluated model using a variety of metrics, including mean absolute percent error
- Created sequence-to-sequence models to project future usage requirements for soon-to-be-retired parts
- Automated data processing pipeline which was previously done manually every day, for which I earned a Peer-to-Peer award

Johnson & Johnson — May 2018 — August 2018
Medical Devices Data Science Intern — Somerville, New Jersey
Mentors: Jeff Headd, PhD; Sparkle Russell-Puleri, PhD

- Helped develop human activity recognition model by improving model accuracy and reducing training time
- Used a combination of LSTM, GRU, and one-dimensional CNN layers
- Evaluated model using AUC and F1-score
- Developed model which predicts hospital readmission using traditional machine learning techniques (e.g. naive Bayes)
- Used Jupyter notebooks to develop models and visualize results, including model performance and training time
- Used TensorFlow for deep learning and sklearn for traditional machine learning

Research in academia

Research Assistant under Prof. James Abello Monedero — May 2020 — August 2020

- Conducted research in graph theory and data visualization
- Studied visualizing graphs which are too large to plot by summarizing them
- Learned how to manipulate large graphs using NetworkX with Python
- Communicated high-dimensional data using novel visualization techniques
- Wrote a final report describing my work

Research Assistant under Prof. Sungjin Ahn — September 2018 — May 2019

- Studied multiagent systems
- Focused on moving an agent in a virtual environment. The agent needed to reach a moving goal while avoiding moving obstacles
- Used a variational autoencoder to represent the environment in a latent space
- Applied a CNN-based model on the representation to predict the future environment
- Applied Monte Carlo tree search to the prediction to move the agent
- Presented my results in group meetings with visualizations

Research Assistant under Prof. Gerard de Melo — September 2017 — August 2018

- Studied document summarization and information retrieval
- Read and reproduced papers on document summarization with abstractive and extractive techniques
- Used Perl to manage data files
- Learned about TensorFlow and TensorBoard
- Helped a graduate student write UNIX shell scripts for information retrieval project
- As part of a grant-writing class, I wrote a grant application for a novel research project under Prof. de Melo

Non-research work

Academia.edu — July 2021 — March 2022
Software Engineer — San Francisco, California

- Worked across the stack, on both the frontend and backend
- Used Ruby on Rails on the backend and Typescript with React on the frontend
- Helped develop upload flow for Academia.edu's new Courses product
- Developed administrator page for user-generated content

Awards and honors

Oracle Peer-to-Peer Award — July 2019
Awarded for my work in automating a data processing pipeline within Oracle's supply chain with Python

Google Data Science Award and HopHacks 3rd-place Award — February 2018
Won as part of a hackathon team for developing a machine learning model to predict stroke survival

Invited talks

"Pedagogical Conversational Agents" August 11, 2023
Delivered at AIDeathon, organised by AI Consensus under Minerva University

Service

AI Classroom Challenge November 2023
Judged students' proposals for educational use-cases of AI

Rutgers IEEE September 2017 — May 2018
Co-organized weekly undergraduate machine learning research paper colloquium