

## Abhinav Madahar

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**Education**      *Bachelor's of Science*, double major in Computer Science and Mathematics  
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  
Mentor: 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 3<sup>rd</sup>-place Award      February 2018  
Won as part of a hackathon team for developing a machine learning model to predict stroke survival

**Service**

Rutgers IEEE

September 2017 — May 2018

Co-organized weekly undergraduate machine learning research paper colloquium