Raghu Ram Sattanapalle

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Education

Northeastern University   Expected May 2025
Master's of Science in Data Science (GPA: 4.00 / 4.00)   *Boston, MA, USA*
- **Relevant Coursework:** Large-Scale Parallel Data Processing, Algorithms, Supervised Machine Learning, Database Management

New York University   May 2018
Master's of Science in Mechanical Engineering (GPA: 3.40 / 4.00)   *New York, NY, USA*
- **Relevant Coursework:** Robot Perception, Simulation Tools and Software for Mechatronics and Robotics

Technical Skills

Languages: Python, R, MATLAB, SQL, C++, Julia, Scala
ML & Data Analysis: PyTorch, TensorFlow, Statistical Modeling, Time Series Analysis, Pattern Recognition, Causal Analysis
Database & Tools: MySQL, MongoDB, NoSQL, PostgreSQL, Hadoop, Git, AWS (EC2, S3, SageMaker), Tableau

Experience

Northeastern University, Khoury College of Computer Sciences   Sept 2023 - Dec 2023; July 2024 - Present
Graduate Teaching Assistant - CS5800 Algorithms   *Boston, MA*
- Facilitated graduate-level algorithms education, covering topics from fundamental data structures to advanced algorithms including Dynamic Programming, Graph Algorithms, and NP-complete problems.
- Provided comprehensive support through grading assignments, offering constructive feedback, and conducting weekly office hours, enhancing student understanding and performance.

Veeco Instruments   Jan 2024 - June 2024
Engineering Data Scientist (Co-op)   *San Jose, CA*
- Developed advanced machine learning models using TensorFlow and PyTorch to predict boron wafer resistance, achieving a 6% average error rate and improving manufacturing efficiency.
- Implemented innovative techniques such as data augmentation and group normalization to overcome limited data challenges, enhancing model performance in semiconductor manufacturing processes.
- Engineered Python scripts for systematic data extraction and structuring, achieving 100% data capture and significantly improving data quality. Created visualization code for manufacturing tool channel data, enabling better pattern recognition and data-driven decision-making.

NYU Dynamical Systems Laboratory   Sep 2018 – Jan 2019; June 2019 - Aug 2021; Jan 2022 - Aug 2022
Researcher/ Research Assistant   *Brooklyn, NY*
- Spearheaded the development of machine learning models to predict ICU patient mortality rates, achieving 90% accuracy and contributing to improved patient care strategies.
- Conducted groundbreaking causal analysis study on gun prevalence and mass shootings, resulting in a publication in Nature Human Behaviour and securing $2.1 million in research funding.
- Created innovative information theory-based models of zebrafish behavior, leading to a publication in Flow: Applications of Fluid Mechanics and advancing understanding of collective animal behavior.
- Mentored a research team in advanced methodologies and statistical analysis, fostering a collaborative research environment and enhancing team productivity.

Projects

Optiver - Trading at the Close: Predict US Stock Movements | *Python, LightGBM, XGBoost, PyTorch*   Oct 2023 - Dec 2023
- Developed ML models to predict stock price movements during closing auction for NASDAQ-listed stocks, achieving top 20% ranking in a Kaggle competition. Preprocessed over 5 million data points, applying feature scaling and imputation to enhance model performance.
- Engineered advanced features including temporal lagged variables and rolling window statistics, significantly improving model accuracy in predicting stock price movements.
- Implemented and fine-tuned various models including LightGBM, XGBoost, and Neural Networks, optimizing for Mean Absolute Error (MAE).

Soundit: Database-Driven Music Streaming Platform | *MySQL, JavaScript, Python*   Oct 2023 - Dec 2023
- Co-developed a dynamic music platform integrating complex MySQL database schema for user interactions and music management.
- Engineered a recommendation system for personalized user experiences, enhancing user engagement and platform functionality.
- Implemented user authentication, subscription services, and interactive features using JavaScript and Python.

Environmental Impact Analysis: Air Quality During COVID-19 | *Python, SQL, Data Visualization*   May 2023 - July 2023
- Led a team investigation into the correlation between COVID-19 lockdown measures and air quality in Massachusetts, utilizing Air Quality Index (AQI) and Social Distancing Index (SDI) as key indicators.
- Leveraged Python and SQL to process and analyze data from multiple sources, creating insightful visualizations to communicate findings.
- Developed a comprehensive analysis framework that could be applied to similar environmental impact studies in urban areas.