Aaron Roach

aroach19953@gmail.com 1-(586)-945-0998 linkedin.com/in/aroach1995/ github.com/roachaar

Work Experience

Quantitative Analyst - KeyBanc Capital Markets

December 2021 - Current // Cleveland, Ohio

- Design, develop, and implement complex research products across all aspects of electronic trading and related systems
- Support research innovation through creative and aggressive experimentation of new data environments, software, and processes
- Document and support code developed across Capital Markets businesses to ensure continuity and rapid issue resolution
- Leverage extensive market datasets, complex system connectivity, Google Cloud development environments, and sophisticated machine-learning techniques to build and maintain a stable algorithmic trading platform
- Automate periodic reports on trading performance for Leadership review
- Automate daily analysis of trading activity and check against compliance standards
- Design and schedule scraping of various online sources for data to be leveraged in modeling and reporting

Predictive Modeler - Auto-Owners Insurance

May 2019 - December 2021 // Lansing, Michigan

- Organized large insurance experience datasets in preparation for modeling/analysis - used to streamline modeling process
- Created intricate tree-based and Generalized Linear Models for Personal Lines Insurance data - optimized profitability and competitiveness in rating algorithms
- Put together presentations with elaborate figures to demonstrate effectiveness of model outputs to Line Departments and Executives
- Integrated data from acquired companies into existing processes, worked with many branches of the company to decode unknowns
- Maintained Territory Analysis process used to set smoothed rates by territory taking into account company data as well as competitor data
- R&D - Looked into potential rating variables to see if they may be worth adding to our models in production
- Put together rating proposals in compliance with regulatory organizations, responded to objections by explaining model methodology

ULA/Grader - Michigan State University

2016 - 2018 // East Lansing, Michigan

- Undergraduate Learning Assistant for Pre-Calculus (MTH 116) at MSU for 5 semesters.
    - Led recitations twice per week
    - Graded and Proctored all assignments and Exams
- Graded problem sets for the Honor's Intro to Mathematical Analysis class, MTH 327H
- Part of this position involved shifts in MSU's Math Learning Center, a tutoring center in which students go for help in Math courses ranging from introductory algebra to Graduate-level courses

TA/Mentor - MSU DPO & MSU TRIO

2016 - 2018 // East Lansing, Michigan

- Participated in the Diversity Programs Office Engineering and Science Success Academy & MSU TRIO Excel Summer Bridge Program
- Served as a mentor, familiarizing students with their new campus & college life
- Later served as a Math Teaching Assistant, hosting recitations/study sessions, and writing/grading assignments
    - Improved students' Math Placement Exam score by an average of 4.5 points

Skills

Languages & Libraries

Python, SQL, R, HTML, JavaScript

pandas, numpy, flask, statsmodels, tensorflow, sklearn, requests, asyncio, sqlalchemy, streamlit, nicegui, xlsxwriter, smtplib, matplotlib, seaborn, plotly, BeautifulSoup, pyautogui

Software Proficiency

Google Cloud, JupyterLab, BigQuery, DataStudio, Visual Studio Code, REST API, Atlassian tools (Jira, Git, Confluence), pgAdmin, SSMS, LaTeX, Docker, Kafka, Emblem, Linux, Visio, Bloomberg Terminal, InsurQuote

Education

Michigan State University

2014-2018

B.S. Advanced Mathematics
Additional Major in Statistics
Minor in Actuarial Science
Cumulative GPA: 3.85

Exams

Actuarial Exam P
Actuarial Exam FM
FINRA Series 7

Academic Research

Predicting Housing Prices using Data Science Techniques

Fall 2018

Collaborated with 2 students in working with open source Data on Kaggle to explore and improve standard methods of quantitative prediction. Cleaned data and implemented machine learning techniques (SVM, linear regression, tree-based methods, and more) - Scored in the top 5 percent of teams in terms of RMSE

New Versions of Knots and Link Invariants

Fall 2017

Worked with Dr. Kristen Hendricks of MSU studying Knot Theory. Looked into representations of knots with Grid Diagrams and Grid Homology. Presented a new theorem: a slight strengthening to an existing Knot Invariant with a less restrictive short exact sequence