Adam McNelis Mahmoud

Curriculum Vitae

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Education

2022–2026 (Expected) **B.A. in Data Science, B.A. in Applied Mathematics**, *University of California, Berkeley*, Berkeley, CA, *GPA: 3.86*
Concentrations: Applied Math & Modeling (Data Science), Numerical Analysis (Applied Math).

Research Experience

Summer 2025 **Seasonality Clustering – A Hierarchical Agglomerative Approach**, *Omnium*, San Diego, CA
- Formulated and executed a research project with Omnium's R&D team to develop a more stable mathematical representation of product seasonality for pricing and demand models.
- Designed hierarchical clustering pipelines with custom, nonstandard distance metrics combining velocity variation and temporal proximity to capture interpretable seasonal structure.
- Compared clustering behaviors using dendrograms and various validation indices to assess the stability of alternative seasonality definitions.
- Integrated the clustered season definitions into pricing regressions, reducing multicollinearity and improving model interpretability and fit.

Spring 2025 **Academic Resource & Funding Allocation**, *UC Berkeley Academic Senate (CAPRA)*
- Analyzed campus enrollment and revenue patterns under the guidance of Dr. Stefano Bertozzi, identifying monetary trends across departments that informed resource allocation discussions.
- Defined data needs, queried institutional databases, and collaborated with campus leaders to obtain missing information, iteratively analyzing results to guide new questions and policy insights.

Spring 2024 **Exploring Indian NGO Distribution**, *Data Science Discovery Program, UC Berkeley*
- Collaborated with nonprofit DaanMatch to understand and improve funding allocation to Indian NGOs.
- Designed a reproducible pipeline to standardize 10,000+ NGO addresses, addressing inconsistent and noisy location data to enable reliable geographic analysis.

Professional Experience

Sept 2025 – Present **Data Scientist**, *Omnium*, Remote
- Support ad-hoc client analyses by building regression pipelines and ANOVA testing frameworks to evaluate cross-brand/product effects and promotional lift, informing optimized pricing and promotion strategies.
- Update syndicated retail datasets and produce monthly business reviews for clients, highlighting emerging patterns and risks to guide account teams and decision-making.

May 2025 – Aug 2025 **Data Scientist Intern**, *Omnium*, San Diego, CA
- Built and compared regression models to quantify market preferences, projecting expected sales growth from new product launches and establishing a scalable framework for brand innovation analyses.
- Developed interactive dashboards and led sales planning calls for 2026 with client brokers and sales managers, informing recommendations on distribution, pricing, and promotion.
- Partnered with Omnium's R&D team to improve components of the company's demand forecasting framework, contributing research insights that shaped ongoing modeling development.

Jan – Sept 2025 **Data Intern**, *Fung Institute for Engineering Leadership, UC Berkeley*, Berkeley, CA
- Analyzed student/alumni data to evaluate program impact and equity-related trends.
- Maintained and improved data workflows and produced visualizations used by program leadership.

Sept 2023 – Mar 2025 **Data Analyst**, *Enrollment Management, UC Berkeley*, Berkeley, CA
- Queried, cleaned, and visualized enrollment data with SQL, Python, and Tableau.
- Analysis set residency targets for 2024, contributing to the enrollment of over 800 additional in-state students.

Feb – Mar 2025 **Admissions Exam Reviewer**, *Stanford University Mathematics Camp (SUMaC)*, Remote
- Assessed mathematical creativity, reasoning, and proof-based problem solving in admissions exams.
- Delivered detailed written evaluations that shaped admission decisions.

Technical Projects

Omnium Flavor Analysis	*Python in Excel* | Developed a regression-based modeling pipeline using flavor velocity indices and scenario testing to support innovation and benchmarking decisions.
Equitable College Match & ROI Tool	*Python, Streamlit, PCA, DuckDB* | Built an interactive college recommendation tool ranking institutions using a weighted similarity metric and ROI modeling, deployed as a public-facing app.
Stack Overflow Survey Dashboard	*Python, Sketchingpy* | Designed a modular interactive dashboard analyzing salary, skills, and education trends using cleaned survey data and object-oriented architecture.
Cook County Housing Prediction	*Python, Scikit-learn* | Built a large-scale regression model using 500k+ records with log transforms, one-hot encoding, and outlier removal to produce interpretable predictive estimates.
Gitlet	*Java* | Implemented core Git version control functionality including commit history, branching, and merging by designing custom data structures and persistent object storage.
Spam Email Classification	*Python, Scikit-learn, Regex* | Engineered a logistic regression spam filter with text-derived features, achieving strong performance validated through ROC, precision, and recall metrics.
Modeling π & e	*Python, Numerical Simulation* | Approximated mathematical constants using numerical and geometric methods and applied results in a damped pendulum simulation to demonstrate real-world behavior.

Relevant Coursework

Data Science	**Core Data Science:** DATA C8 Foundations of Data Science; DATA C100 Principles & Techniques of Data Science; DATA C140 Probability for Data Science; DATA C104 Human Contexts and Ethics of Data **Machine Learning and Modeling:** DATA 144 Data Mining and Analytics; COMPSCI 189 Introduction to Machine Learning **Programming and Systems:** COMPSCI 61BL Data Structures and Programming Methodology; DATA C101 Data Engineering; STAT 33A Programming in R; STAT 33B Advanced Programming in R **Computational and Applied Decision Tools:** DATA C88C Computational Structures in Data Science; UGBA 88 Data and Decisions
Applied Mathematics	**Foundations:** MATH 53 Multivariable Calculus; MATH 54 Linear Algebra and Differential Equations; MATH 55 Discrete Mathematics **Abstract and Theoretical Math:** MATH 110 Abstract Linear Algebra; MATH 113 Abstract Algebra; MATH 104 Real Analysis; MATH 185 Complex Analysis **Numerical Analysis and Scientific Computing:** MATH 156 Numerical Analysis for Data Science and Statistics; MATH 128A Numerical Analysis; MATH 128B Numerical Analysis II; MATH 126 Introduction to Partial Differential Equations

Extracurriculars

Fall 2024 – Spring 2025	**Student Advisory Board Member**, *College of Computing, Data Science, and Society, UC Berkeley*, Berkeley, CA
Fall 2024 – Spring 2025	**Mentor**, *Mathematical and Physical Sciences Scholars Program, UC Berkeley*, Berkeley, CA

Technical Skills

Languages	Python, SQL, R, Java, MatLab, HTML/CSS
Libraries	Pandas, NumPy, scikit-learn, statsmodels, SciPy, PyTorch, PyMongo, Keras, Matplotlib/Seaborn
Databases & Tools	PostgreSQL, DuckDB, MongoDB (NoSQL), Excel, Tableau, Git, Jupyter
Methods	Regression, ANOVA, Hypothesis (A/B) Testing, Forecasting, Clustering, Feature Engineering, PCA, Neural Networks