

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	<i>Python in Excel</i> Developed a regression-based modeling pipeline using flavor velocity indices and scenario testing to support innovation and benchmarking decisions.
Equitable College Match & ROI Tool	<i>Python, Streamlit, PCA, DuckDB</i> 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	<i>Python, Sketchingpy</i> Designed a modular interactive dashboard analyzing salary, skills, and education trends using cleaned survey data and object-oriented architecture.
Cook County Housing Prediction	<i>Python, Scikit-learn</i> Built a large-scale regression model using 500k+ records with log transforms, one-hot encoding, and outlier removal to produce interpretable predictive estimates.
Gitlet	<i>Java</i> Implemented core Git version control functionality including commit history, branching, and merging by designing custom data structures and persistent object storage.
Spam Email Classification	<i>Python, Scikit-learn, Regex</i> Engineered a logistic regression spam filter with text-derived features, achieving strong performance validated through ROC, precision, and recall metrics.
Modeling π & e	<i>Python, Numerical Simulation</i> 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 (planned Spring 2026) 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 (planned Spring 2026) 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 (planned Spring 2026); MATH 126 Introduction to Partial Differential Equations (planned Spring 2026)

Extracurriculars

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

Technical Skills

Programming	Python, R, SQL, Java, MATLAB, HTML, LaTeX
Libraries	Numpy, Pandas, Scikit-learn, Scipy, PyMongo, Keras, DuckDB, statsmodels, Matplotlib/Seaborn, Sketchingpy
Tools	Excel, Tableau, Google Sheets, ATLAS.ti
Languages	Spanish (California State Seal of Biliteracy)