

# Adam McNelis Mahmoud

## Curriculum Vitae

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### Education

- 2022–2026 **B.A. in Data Science, B.A. in Applied Mathematics**, *University of California, Berkeley*, Berkeley,  
(Expected) CA, GPA: 3.85  
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 dendograms 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	Developed a Python-in-Excel pipeline to estimate new flavor performance with regression-based indices, providing interpretable benchmarks for product innovation.
Stack Overflow Dashboard	Built an interactive Sketchingpy dashboard analyzing salaries/tech usage by education level; applied object-oriented design for modularity and reproducibility.
Spam Email Classification	Engineered logistic regression spam filter (85% accuracy) with feature engineering; evaluated using precision, recall, and ROC curves.
Cook County Housing Prediction	Developed predictive housing price model on 500k+ records with regression and feature engineering (log transforms, one-hot encoding, outlier removal).

## Relevant Coursework

Applied Mathematics	<b>Foundations:</b> MATH 53 Multivariable Calculus; MATH 54 Linear Algebra and Differential Equations; MATH 55 Discrete Mathematics <b>Abstract and Theoretical Math:</b> MATH 110 Abstract Linear Algebra; MATH 113 Abstract Algebra; MATH 104 Real Analysis; MATH 185 Complex Analysis <b>Numerical Analysis and Scientific Computing:</b> MATH 156 Numerical Analysis for Data Science and Statistics; MATH 128A Numerical Analysis (in progress); MATH 128B Numerical Analysis II (planned Spring 2026); MATH 126 Introduction to Partial Differential Equations (planned Spring 2026)
Data Science & Computing	<b>Core Data Science:</b> 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 <b>Machine Learning and Modeling:</b> DATA 144 Data Mining and Analytics (in progress); COMPSCI 189 Introduction to Machine Learning (planned Spring 2026) <b>Programming and Systems:</b> COMPSCI 61BL Data Structures and Programming Methodology; STAT 33A Programming in R; STAT 33B Advanced Programming in R; DATA C101 Data Engineering (in progress) <b>Computational and Applied Decision Tools:</b> DATA C88C Computational Structures in Data Science; UGBA 88 Data and Decisions (in progress)

## Extracurriculars

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

## 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)