

MILES T. MENA

<https://www.linkedin.com/in/miles-mena> • Boulder, CO • 719.985.1772 • menamil28@outlook.com

EDUCATION

Ph.D. Computer Science, focus in data science and predictive modeling May 2026
University of Colorado Boulder

B.S. Mathematics and Data Science May 2023
Lewis University (Romeoville, IL) GPA: 3.88/4.0

SKILLS

Languages: Python, Java, R, html, LaTeX, MATLAB

Software: MySQL, Netlogo, Excel, Github, SageMath, Microsoft Office, Google Suite

Libraries: Pandas, NumPy, Matplotlib, seaborn, scikit-learn, TensorFlow, PyTorch

Data Analysis: Machine Learning, Natural Language Processing, Chi-Squared, Markov Models, Hypothesis Testing

Communication: teaching and training, public speaking and presenting, scientific and analytical writing

RESEARCH EXPERIENCE

Data Scientist, 21 Century Community Learning Centers Aug 2022 - Aug 2023
Lewis University

- Cleaned multiple data sources from after-school programs (10 schools) using Pandas and NumPy
- Provided data collection and formatting expertise to a research team of 10 social scientists and social workers/student social workers, supporting their research efforts
- Evaluated program performance using statistical methods, e.g. hypothesis testing and histograms, and provided quantitative data demonstrating program effectiveness as well as qualitative summaries of student experience to facilitate program growth

Undergraduate Researcher Jun 2022 - Jul 2022
Brown University REU (Research Experience for Undergraduates)

- Performed quantitative analysis on large police datasets obtained from open government sites, investigating the association between race/income, area of arrest, and charge, using Chi-Square Tests and Person Residuals
- Conducted literature review of grassroots coalition reports and academic research on policing using Google Scholar

Undergraduate Researcher Aug 2021 - May 2022
LU Center for Undergraduate Research in Mathematics

- Created NHL real-time win probability Markov model using large NHL datasets quantifying every game from the 2013-2014 hockey season including multiple time-stamped data points such as win/loss, score, shots on goal, manpower for both teams
- Illustrated effects of shots on goal and manpower on win forecast probability using visualizations of the two predictive models on a shared set of games
- Condensed research findings into scientific arguments to produce and publish a paper in an undergraduate journal

Undergraduate Researcher May 2021 - Jul 2021
Fairfield University REU

- Formulated recursive and closed form equations that generate spanning forest probabilities on various graph families like Cycle graphs and Binary Tree Graphs
- Constructed and implemented an algorithm to generate spanning forest probabilities for simple graph families like the Path Graph in Python

PUBLICATIONS

Redmon, E*, **Mena, M***, Vesta, M*, Renzyl Cortes, A., Gernes, L*, Merheb, S*, Soto, N*, Stimpert, C*, & Harsy, A. (2023). Optimal Tilings of Bipartite Graphs Using Self-Assembling DNA. The PUMP Journal of Undergraduate Research, 6, 124-150. Retrieved from <https://journals.calstate.edu/pump/article/view/2427>

Campos-Chavez, H*, deBolt, W*, **Mena, M***, Prince, J*, Alramahi, A*, Dudzinski, R*, Thrawl, S*, DeLegge, A, Harsy, A. Predictive Modeling and Analysis of Hockey Using Markov Chains. Mathematics and Sports, v. 4, n. 1, 2022. Retrieved from <http://libjournals.unca.edu/OJS/index.php/mas/article/view/24/15>

TEACHING EXPERIENCE

Partnerships for Informal Science Education in the Community Aug 2023 - present
CU Boulder

- Engage local k-12 students in inquiry-based science activities to support the development of students' scientific identity
- Facilitate scientific discussion on topics like thermodynamics and matter for groups of up to 20 students

CAMS study table

Jan 2020 - May 2023

Lewis University

- Instructed undergraduates in complex computer science and mathematical concepts to support student success
- Tailored concept presentation to support multiple learning styles and scaffolded material to encourage mastery of increasingly complex computer science and mathematical material

Peer Mentor

Aug 2021 - May 2023

Lewis University Promotion of Underrepresented Minorities in Academic STEM

- Provided mentorship to undergraduate students from underrepresented groups to successfully transition into college
- Facilitated weekly reflective small group discussions on topics like imposter syndrome, personality exploration, and goal setting
- Provided weekly individual advising on personal and career development for caseload of three students

PROJECT EXPERIENCE

Predicting Average Heart Rate during Cardiovascular Exercise

Aug 2022 - Dec 2022

- Built a multiple linear regression model using Python scikit-learn to predict an individual cross-country athlete's average heart rate during a run given a set of biometric and performance data obtained from a Garmin wearable device
- Built two logistic regression models with Python scikit-learn: one which can identify with 95% accuracy an individual athlete based on performance data, and another which can with 41% accuracy identify the day of the week on which a given run occurred using data including time, distance, and pace

Aeolus' Bag of Winds (and other weather events)

Jan 2023 – May 2023

- Clustered geospatial motor vehicle accident data according to the proximity of the accident and the estimated weather condition at the time of the accident to mine systematic issues within transportation infrastructure
- Developed a clustering algorithm called Geospatial Clusters of Climate Related Accidents with with Noise (GEOCCRAN) based on Density-Based Blustering of Applications with Noise (DBSCAN)

HONORS AND AWARDS

Outstanding Research Presentation Award, National Diversity in STEM Digital Conference

2021

Outstanding Undergraduate Research Award, Mathematics Ass'n of America, Illinois Section

2021

CONFERENCE PRESENTATIONS

Mena, Miles (2022, August 2-5) *Predictive Hockey Analytics*. [Conference Presentation] MAA (Mathematical Association of America) Mathfest, Philadelphia, PA, USA

Mena, Miles (2022, August 2-5) *Predictive Modeling for Hockey Analytics Utilizing Markov Chains*. [Poster Session] MAA Mathfest, Philadelphia, PA, USA

Mena, Miles (2022, March 25-26) *Spanning Forest Probabilities on Path Graphs and Binary Trees*. [Conference Presentation] ISMAA, (Illinois Section of the Mathematical Association of America) Decatur, IL, USA

Mena, Miles (2022, March 25-26) *Analysis of NHL Hockey*. [Conference Presentation] ISMAA, Decatur, IL, USA