

Lily Oglesby

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Summary

Graduate business research student with a background in data science and astrophysics. Interested in using statistical analysis, machine learning, and business analytics to understand complex data and support practical decisions. Experience building reproducible Python and SQL workflows, developing predictive models, analyzing large datasets, and communicating findings across scientific, public health, and business applications.

Skills

- **Programming and Analytics:** Python, SQL, Pandas, NumPy, SciPy, Scikit-Learn, Matplotlib, Seaborn, Jupyter
- **Business Analytics and Visualization:** Excel, Tableau (coursework), Matplotlib, Seaborn, KPI Analysis, Spreadsheet Modeling, Solver, SolverTable
- **Databases and Tools:** PostgreSQL, MongoDB, Git, GitHub, Linux, Docker, VS Code, LaTeX
- **Analytical Methods:** Regression, Classification, Time-Series Analysis, Forecasting, Statistical Inference, Hypothesis Testing, A/B Testing, Causal Inference, Cross-Validation, Feature Engineering, Model Evaluation, Optimization, Segmentation, Retention and Churn Analysis
- **Additional Machine Learning:** TensorFlow/Keras, Random Forests, CNNs, Anomaly Detection, Bayesian Inference, PyMC
- **Communication and Collaboration:** Technical communication, cross-functional collaboration, teaching and mentoring, presenting analytical findings to technical and nontechnical audiences

Education

- **University of Southern California | Marshall School of Business** Los Angeles, CA
Master of Science in Business Research Aug 2025 – Dec 2026
 - **Fall 2026 coursework:** Regression Analysis, SQL Databases, Spreadsheet Modeling, Data Analytics for the Games Industry, Deep Learning
- **University of California, Berkeley** Berkeley, CA
Bachelor of Arts: Double Major in Data Science and Astrophysics Aug 2021 – May 2025

Selected Data Science and Analytics Projects

- **Haqdarshak Social Protection Program Analytics Project**
USC Graduate Research, Data Analysis, Program Analytics 2025
 - Cleaned and reviewed program data and analyzed field-worker activity over time to identify operational patterns affecting outreach and access to government benefit and subsidy programs.
 - Presented preliminary findings to Haqdarshak stakeholders and used their operational insights to contextualize observed data patterns and refine recommendations for outreach and service delivery.
- **Particulate Matter Health Impact and Forecasting**
Python, Pandas, Scikit-Learn, Statistical Modeling, Causal Inference 2024
 - Integrated and analyzed CDC and NOAA data to study relationships between particulate matter exposure and asthma outcomes and predict pollution levels from weather and environmental variables.
 - Compared generalized linear and random forest models using feature engineering and leakage-resistant temporal validation; the random forest achieved an RMSE of 4.35 versus 5.20 for the baseline model on unseen data.
- **PostgreSQL vs. MongoDB Yelp Benchmark**
PostgreSQL, MongoDB, SQL, Python, Jupyter, Docker 2024
 - Designed equivalent analytical workloads across relational and document databases and compared data models, SQL queries, aggregation pipelines, indexes, execution plans, scan volume, and runtime performance; indexing reduced one MongoDB query runtime by approximately 94%.
- **Scientific Data Analytics Portfolio**
Python, Pandas, NumPy, Scikit-Learn, PyMC, Data APIs, Astropy 2024
 - Built reproducible workflows using satellite observations, stellar time-series data, telescope images, and astronomical spectra; applied database queries, feature engineering, regression, cross-validation, Bayesian estimation, high-dimensional preprocessing, and model evaluation.

Research Experience

- **Space Sciences Laboratory, UC Berkeley | lilyoglesby.com/jgr-paper** Berkeley, CA
Undergraduate Researcher - Data Analysis Aug 2021 – May 2025
 - Built reusable Python pipelines for three years of satellite data, performing data validation, time-series preprocessing, statistical filtering, event comparisons, and visualization to identify patterns across atmospheric and space-weather measurements.
 - Collaborated with researchers to interpret findings, refine analyses and visualizations, and communicate results through reproducible figures and written explanations supporting a [peer-reviewed publication](#) in the *Journal of Geophysical Research*.
- **Institute for Astronomy, University of Hawai'i at Mānoa | lilyoglesby.com/cnn-research** Honolulu, HI
Research Intern - Machine Learning Jun 2024 – Aug 2024
 - Applied Python-based anomaly detection to approximately 800,000 astronomical images and trained a convolutional neural network for multiclass classification, using GPU parallelization to accelerate preprocessing and model execution. [Report available online.](#)

Teaching and Mentoring Experience

- **USC, UC Berkeley, and University of Hawai'i** Los Angeles, Berkeley, and Honolulu
Instructor, Teaching Assistant, Reader, Grader, and Research Mentor Aug 2022 – Jul 2026
 - Taught and mentored high school, undergraduate, and graduate students through USC, UC Berkeley, and the Mauna Kea Scholars Program; led workshops and office hours on responsible AI, Python, data analysis, research design, graduate applications, and technical presentations.