

Bosen Yang

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EDUCATION

- University of California, Los Angeles** (GPA: 3.939) Degree Expected Jun 2026
- *B.S. in Applied Mathematics (Specialize in Computing), B.S. in Statistics and Data Science*
 - Core Coursework: Real/Complex Analysis, Numerical Analysis, Math Modeling, Linear Algebra, Diff Eqn, Graph Theory, OOP, Software Tools, Data Structure, Prob Theory, Linear Reg, Comp/Math Stats, Exp Design, Data Mining, Monte Carlo, Statistical Consulting.

SKILLS

- **Programming:** MATLAB, R, Python, Java, C, C++, Bash
- **Software Tools & Frameworks:** LaTeX, MySQL, VS Code, Git, Tableau, Word/Excel

EXPERIENCE

- Directed Reading Program** *UCLA Mathematics – Mentored by PhD Candidate William Chang* Los Angeles, CA; Jan 2026 – Present
- Directed reading on geometry and computational complexity of **generalized matrix norms** in functional analysis.
 - Studied push-forward and pull-back norms in Banach spaces and their duality in constrained operator norm problems, focusing on computational efficiency and connections to Bayesian inference, regularization, and robustness in machine learning algorithms.

- Jietai Solar** (*Data Science / ML Intern*) Anhui, Chuzhou, CN; June 2024 – Aug 2024
- Analyzed photovoltaic product sales and production cost data for systematic manufacturing schedule optimization. Adopted time-series forecasting and regression modeling techniques in R and Python to model short to medium term demand.
 - Queried and imported historical production volume and profit/loss data using SQL, and constructed forecasting frameworks informed by cost accounting and market trends.
 - Implemented Machine Learning algorithms (RFR, LSTM etc.) with mlr3 and scikit-learn. Performed cross validation and scenario analysis to improve forecast stability and accuracy on rolling basis.

- University of California, San Diego** (*Instructional Assistant & Reader / Grader*) San Diego, CA; Sep 2023 – Dec 2023
- Course: MATH 20E Vector Calculus - Holding 4 discussion sections and weekly office hours; grading homework/exams; proctoring exams.

PROJECTS

- Classification Modeling for Tumor Diagnosis** *UCLA Stats 101C* Nov – Dec 2025
- Built benchmarked classification models on large-scale medical dataset (around 100000 observations, 50 predictors) to distinguish malignant vs. benign tumors.
 - Adopted and compared multiple data imputation strategies (regression based, EM algorithm etc.) to address massive missing data, and trained Logistic Regression, RF, XGBoost, LightGBM models using mlr3 with automated hyperparameter tuning in R.
 - Achieved top 10% classification accuracy (top 30 out of 300) in course tournament evaluation through benchmark experiments.

- Multi-Sensor Temperature - Enzyme Activity Experiment & Data Denoising** – *Mentored by Prof. Riviere (CMU)* July – Aug 2025
- Designed and built a multi-sensor temperature monitoring module using Arduino UNO controller to study ALP enzyme solution.
 - Modeled a physical heat-insulated container using Autodesk Inventor and simulated heat diffusion via the fundamental solution of the heat equation, resulting in a 3D Gaussian heat distribution model. Designed a monotonic heating experiment with delayed enzyme reaction modeling and applied method of characteristics to approximate ALP optimal activity temperature (around 39°C).
 - Designed an integrated real-time denoising framework combining Dynamic Inverse Variance Weighting, FFT, and Kalman Filter in R, monitoring and control within the designated interval of the module.

- International Global Terms of Trade Time Series Forecasting** – *Mentored by Prof. Kempthorne (MIT)* Aug – Sep 2025
- Analyzed Terms of Trade (ToT) time series (CN, JP, IN, AU, US) and constructed multivariate forecasting models in R
 - Implemented and compared ARIMA, ETS (with Denton-Cholette Method), Multivariate, and GARCH model using forecast, vars, and rugarch in R, with stationarity and normality tests, Box-cox transformation and correlation analysis to inform model selection.
 - Conducted trend analysis of ToT and derived econometric insights to inform business decision-making and macroeconomic forecasting.

REVIEWS

• Publications:

- [1] Yang, Bosen. "Application of matrix decomposition in machine learning." *2021 IEEE International Conference on Computer Science, Electronic Information Engineering and Intelligent Control Technology (CEI)*. IEEE, 2021.
- [2] Yang, Bosen. "Internal Combustion Engine Vehicles Fuel Efficiency Regression Analysis with Physical and Engineering Perspective." *Highlights in Business, Economics and Management* 65 (2025): 382-392.

• Accepted Manuscript:

- [3] [Statistical Methods for Adaptive Optimization in Manufacturing Process](#) (ICMAEE 2025)