

# Jaewoong Lee

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## EDUCATION

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### University of California, Berkeley

Aug 2025 – Dec 2025

*Exchange, Computer Science*

- GPA: 3.9

### Pohang University of Science and Technology

Expected Dec 2026

*B.S in Mathematics*

- GPA: 3.7

## PROFESSIONAL EXPERIENCE

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### Research Assistant

Jan 2026 – Feb 2026

*Sensorimotor Neural Engineering Lab, UC Berkeley*

### Research Assistant

Jun 2025 – Aug 2025

*Pohang University of Science and Technology*

- Applied time-series methods to model the large-scale  $N=200$  volatility matrix derived from real-world S&P 500 data, capturing long-memory property to enhance volatility clustering.
- After extracting daily return from YahooFinance, executed PCA factor decomposition and dimensionality reduction for robust estimation, with the number of factors( $K=3$  factors) determined via the Eigenvalue Ratio Test and Variance Explained Criterion
- Developed ARFIMA-based factor prediction and applied the idea of Dynamic Conditional Correlation(DCC) model in Python/R to forecast
- Assessed model performance through statistical error measures including Frobenius norm, Mean Squared Error (MSE), and Max Norm, achieving a 17% improvement in volatility forecasting accuracy compared to the standard DCC model
- Participated in and created 30 minute long presentations for POSTECH's Actuarial modeling, Insurance & Risk Management Research Group

### Research Assistant

May 2024 – Sep 2024

*Research Institute of Industrial Science & Technology*

- Modeled optimal design of thermoelectric modules using feature engineering, based on features like thermal/electric conductivity, module geometry to optimize module efficiency
- Applied linear regression and finite element method (FEM) to simulated data to maximize Figure of merit(ZT) and power capacity
- Analyzed heat flow and energy conversion rate data simulated from COMSOL multiphysics software, using Python/R.

### Sergeant

Aug 2022 – Feb 2024

*Republic of Korea Army, CIQ*

- Facilitated meetings for the United Nations Command Military Armistice Commission (UNCMAC), with translation
- Served as the top enlisted representative, leading and representing soldiers

## PROJECTS

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### Cook County Housing Price Prediction Model | Python, sklearn, seaborn, SQL

Sep 2025 – Nov 2025

- Developed a predictive model for housing prices using feature engineering and 5-fold Cross-Validation
- Conducted EDA using seaborn to identify outliers and preprocessed data using regex
- Applied OneHotEncoder to convert categorical variables for model training
- Designed customized Weighted MSE metric to capture fairness, resulting in less regressive outcome than standard RMSE

## TEACHING EXPERIENCE

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### **Student Mentoring Program Mentor**

*Feb 2024 – Feb 2025*

*Pohang University of Science and Technology*

- Facilitated collaborative discussion-based sessions for Calculus 1, Multivariable Calculus, Linear Algebra
- Communicated academic development and career path options to students, giving guidance on course selection, and long-term goals

### **Instructor**

*Feb 2024 – Sep 2024*

*Altis Math Academy*

- Taught math to high school students
- Covered precalculus, probability, geometry for Mathematical Reasoning Exam
- Gave feedback for mock tests

## RELEVANT COURSES

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**UC Berkeley:** Probability and Random Processes, Intro to ML, Algorithms, Principles and Techniques of Data Science

**POSTECH:** Statistical Learning, Real Analysis, Probability and Statistics, ODE, Intro to Numerical Analysis, Linear Algebra, Calculus 1, Multivariable Calculus, Artificial Intelligence Basics I, Artificial Intelligence Basics II, Programming & AI in Engineering

## QUALIFICATION AND SKILLS

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**Programming:** C++, Python, R, SQL

**Tools:** Pandas, Numpy, Scipy, Seaborn, Latex

**English Proficiency:** TOEFL - 104

## AWARDS, SCHOLARSHIPS, AND GRANTS

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**Jigok Scholarship:** Received every semester of enrollment (Feb 2021- Dec 2025)