

# Khanh Nguyen (Alex) Bui

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**OBJECTIVE:** A dedicated Business Analytics and Data Science student with strong analytical thinking and problem-solving skills. Seeking opportunities to apply statistical modeling, predictive analytics, and data-driven insights to business challenges.

## Education

**Bachelor of Commerce** (Grade: **Distinction**)

Feb 2024 - July 2026

*The University of Sydney*

- **Major:** Business Analytics and Data Science
- **Relevant Topics:** Statistical Modeling, Integer/Non-Integer Optimization, Dynamic Programming, Stochastic Processes, Bayesian Inference, Generalized Linear Models, Time Series Analysis, Option Pricing, Machine Learning.

## Skills & Interest

**Technical Skills:** Python, R, SQL,  $\text{\LaTeX}$ , Quarto, Git.

**Academic Interest:** Time Series Analysis, Portfolio Optimization, Machine Learning, Option Pricing.

**Other Interests:** Golf, Photography, Poker.

## Technical Projects

### Australian CPI Forecasting

Nov, 2025

- Developed an ARIMA forecasting pipeline for Australian CPI data using Python, Statsmodels, and Pandas.
- Implemented exhaustive grid search with expanding window cross-validation to identify optimal hyperparameters.
- Surpassed baseline model performance by reducing Mean Squared Error (MSE) through out-of-sample validation.
- **Tools Used:** Python (Statsmodels, Pandas, Scikit-learn, Matplotlib, Seaborn), Quarto, GitHub Pages
- **Technical Skills:** Time Series Modeling, Expanding Window Cross-Validation, Data Visualization.

### Regime-Switching Volatility Forecasting

Dec, 2025

- Fetched market data using Quantmod and wrote scripts to resolve timezone-related date errors.
- Applied Hidden Markov Models within a GJR-GARCH framework to forecast volatility and identify distinct market stress regimes.
- Selected Skewed Student-t distributions to accurately model 'fat tails' and asymmetry in market data.
- Reduced MSE by 1.35% against single-regime benchmarks via parallelized expanding window cross-validation.
- **Tools Used:** R (MSGARCH, Quantmod, Tidyverse, doParallel, Plotly), Quarto
- **Technical Skills:** Volatility Modeling, Hidden Markov Models, Parallel Computing.

## Experience

### Receptionist

May 2025 - Sep 2025

*BeBee Co-Working Space - HCMC, Vietnam*

- Met and greeted up to 200+ guests daily to ensure they received a warm and friendly welcome.
- Took time to understand the needs of each visitor and offered additional information.
- Kept accurate records on check-ins and maintained data confidentiality.
- Worked as part of a team of 5 and motivated others whenever possible.

### Waiter

May 2024 - Sep 2024

*Ngon 138 Restaurant - HCMC, Vietnam*

- Served customers and addressed complaints to improve customer service.
- Developed verbal communication skills by engaging with manager and kitchen staff to stay up-to-date on supply availability.

- Developed time management skills to minimize customer wait times.

## **Full-time Junior Golfer**

**Jun 2019 - Dec 2021**

*MMG Performance - Orlando, Florida*

- Trained with world-class coaches and competed in various junior tournaments.
- Achieved the best personal ranking of 7th in Disney Summer Junior Open (+10 over two rounds).
- Developed self-discipline through training and mental toughness through competition.