

Ho Huu Binh

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PERSONAL OBJECTIVE

As a postgraduate scholar specializing in Applied Mathematics, I harbor a profound aspiration to broaden my research and captivate my interest in the intricate domains of finance, statistics, machine learning, and forecasting. Possessing an unyielding eagerness to contribute to a multidisciplinary field, I pledge my utmost dedication to tasks of all magnitudes.

Currently, I am poised to harness these acquired skills as I navigate through diverse industries, aiming to contribute significantly to businesses' growth and success as an applied scientist. My objective is to amalgamate my academic knowledge with practical applications, thereby fostering an environment of continuous learning and innovation and resolving current obstacles in industries.

EDUCATION

- **International University - Vietnam National University** HCMC, Vietnam
BS. Applied Mathematics; GPA: 3.23/4 *Aug 2018 - July 2022*
 - **Specialized Courses:** Statistical Machine Learning, Time Series Forecasting, Stochastic Models, Optimization, Financial Risk Management, Financial Mathematics.
- **Honors and Awards:**
 - **First Prize** - Vietnam National Olympic Econometrics and Application contest (July 2021).
 - **Third Prize** - Scientific Conference for Student in 2021 (Vietnam National University.)

EXPERIENCE

- **FPT Japan - Usee** HCMC, Vietnam
Inventory Optimization and Forecasting (Intern) *July 2021 - November 2022*
 - **Inventory optimization:** Tracked inventories of various pharmaceutical SKUs periodically, proposed simple yet effective daily inventory management policy based on domain insights, and cycle service levels and successfully curbed lost sales resulted from the risk of stock-outs.
 - **Forecasting sales:** Investigated the the zero sales scenarios where the actual demand of such products is positive. Applied AI-driven and statistical models to generate probabilistic forecasts. Successfully reduced forecasting errors (approximately **5%** improvement) and enhanced uncertainty quantification which in turn minimized chance of biased forecasts and augmented forecast with a flexible risk management.
- **Manulife** HCMC, Vietnam
Product Development (Intern) *July 2022 - October 2022*
 - **Product specification:** Observed, analyzed and detected cash-flow anomalies. Derived premium rates for critical illness products. Examined quota share treaty for reinsurance while read technical documents and performing quarterly market researches. (All tasks using Excel and R)
 - **Data fetching:** Performed SQL queries to retrieve requested data from data lake.

TYPICAL PROJECTS¹

- **Forecasting Sales and Demand Planning of Retail Goods (July 2022 - Present):**
 - Inspected the efficiency of some notable classical time series models with large and high-granularity data sets. Applied a novel, scalable, expeditious forecasting process equipped with machine learning and deep learning frameworks and **business-oriented metrics** for all types of data patterns. Successfully improved nearly **42%** in forecasting accuracy over the classical time series models. Designed simple and easy-to-optimize replenishment strategies for inventory problems. Reduced the number of deliveries from warehouses. Achieved storage utilization nearly **100%** with no stock-out incidents.
 - Continually Reproduced and benchmarked up-to-date forecasting methods in recent academic literature to assess and probe the efficacy of these models in real-world settings.

¹Most Projects can be found via Github links above

- Updated the current research trends, studies, applications on inventory design to refine and cultivate the business yet quantitative-oriented mindset.
- **Capacitated Vehicle Routing Problem with Reinforcement Learning (September 2023):** Investigated the efficacy of reinforcement learning model to the vehicle routing problem. Compared with other standard frameworks such as meta-heuristic algorithms and Google's OR-Tools. Significantly reduced at the largest **22%** in travel distance over the classical methods with marginal additional time.
- **NLP: Multi-label Text Classification To Categorize Bank Transactions Descriptions (June 2023)** Applied PhoBERT to categorize over twenty classes for bank transaction descriptions. Achieved **90%** accuracy and nearly **0.80** f1-score on new data, suggesting the model may generalize well.
- **Customer Churn Analysis (Feb 2022):** Executed comprehensive EDA to decipher data patterns and relationships. Exercised Feature Engineering encompassing preprocessing and feature selection. Deployed advanced machine learning models with tuning for precise and business-oriented attrition predictions with robust performance (recall score exceeding **0.92** and ROC AUC surpassing **0.80**). **Well-calibrated** model predictions to enhance decision-making reliability. Implemented **Survival Analysis** for the accurate prediction of the Lifetime Value (LTV) of customers to gauge customers' loyalty and income-generating capability
- **Other mini projects - Supply Chain Optimization and Marketing** Some works on various problems in supply chain management and marketing including demand planning, marketing mix modelling, transportation operations, inventory optimization, recommender systems, customer retention.
 - **Time Series Forecasting:** Implementing various industry-proven and novel models for inventory demand forecasting. Mainly focus on specific cases such as demand forecasting under lost sales by backorders or F&B and FMCG businesses.
 - **Dynamic Pricing:** Notebooks covering how dynamic pricing algorithms can power online retail sales for different scenarios and customer segments. Demonstrating the ideas and how these algorithmic approaches has been flourished in large-scale company like Walmart. Aim to include some notes on pricing strategies and blueprints for automation pricing systems in near future.

PUBLICATIONS

- Bao Q. Ta *, Vu T. Huynh, Khai Q H. Nguyen, Phung N. Nguyen and **Binh H. Ho** - **Maximal predictability portfolio optimization model and applications to Vietnam stock market** - "Studies in Systems, Decision and Control" Series - "Credible Asset Allocation, Optimal Transport Method and Related Topics", ISSN 2198-4182, Springer 2022 (The 15th International Conference of The Thailand Econometric Society - TES)

SKILLS

- **Deep/Machine learning Framework** (PyTorch, TensorFlow/TensorFlow Probability, scikit-learn, Pyro, PyMC3, Git), **Data wrangling** (Pandas), **Forecasting** (Nixtla, Darts, GluonTS, PyTorchTS), **Optimization** (GUROBI, CVXPY, Pulp, OR-Tools), **Visualization**(matplotlib, ggplot2), **R** (tidyverse, caret), SQL, Statistical Modelling, Machine Learning, A/B Testing.