# Xie Hao

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## EDUCATION BACKGROUND

**The Chinese University of Hong Kong, Shenzhen (CUHKSZ)** **09/2019 – 06/2023(EXP)**

Bachelor of Science in Mathematics and Applied Mathematics | GPA: 3.79 / 4.0

**Core Coursework:** Calculus, Linear Algebra, Probability and Statistics, Numerical Analysis, Discrete Mathematics, Real Analysis, Complex Analysis, Ordinary/Partial Differential Equation, Optimization, Number Theory, Mathematical Model.

## EXTRACURRICULAR EXPERIENCES

**Quantitative Trading Strategy Combining Three Models**

**Team Leader, COMAP MCM (Problem C)** **02/2022**

- Compared historical of BTC and Gold to determine the basic strategy of the portfolio;
- Conducted ARIMA model to predict the future price of the two underlying assets; Determined the buy and sell signal by using the Stochastic Oscillator of BTC; Refer to the risk management strategy of the Turtle Trading Principle;
- Built the strategy by python and used the historical data and gained an average annual percentage rate (APR) of approximately 173.59%, teamwork recognized by an Honorable Mention prize.

**Impact of Construction of Ecological Conservation on Environment**

**Team Leader, APMCM (Problem C)** **11/2021**

- Built a data-driven mathematical model to quantitatively study the impact of the construction of ecological conservation on the environment.
- Proposed ecological environment change index (EC) of a nature reserve to evaluate the performance of China's Saihanba ecological protection on reserving the land nature.
- Collected a large dataset from the official report of Saihanba, followed by SQL-based data manipulation; Identified a suite of key indicators based on performing mechanism analysis; performed PCA for dimensionality reduction.
- Conducted linear regression on the weather status in the nearby city of Beijing and quantitatively evaluate the impact of Saihanba Tree Farm's restoration on Beijing's ability on sandstorm resistance.
- Built K-means clustering model to select other major cities in Asia with a similar situation to Beijing; Suggested the scale of ecological areas be built and evaluated the expected Carbon sequestration of the forest farms.
- Programmatically implemented workflow in python and SQL; teamwork recognized by a Third prize.

## RESEARCH EXPERIENCES

**Analysis of the Feasibility of Opening Domino's on Campus**

***Financial Management* Course Project, CUHKSZ** **11/2021 - 01/2022**

- Coordinated a three-member team to evaluate the feasibility of opening a Domino's on campus, with investment strategies proposed.
- Systematically studied the development of the world's leading fast-food companies; identified an array of core competencies for Domino's.
- Compared domestic and international fast food enterprises concerning financial status, technology advancement, and strategic layout.
- Predicted the future cash flow and proposed several appropriate locations open the store on campus, with risk analysis included.

**COVID-19 Prediction Under Optimal Policies Based on SIR Models**

***Mathematical Modeling* Course Project, CUHKSZ** **10/2021 - 12/2021**

- Studied the infectious rate of the COVID-19 pandemic in different countries based on the SIR(Susceptible, Infectious, or Removed) model.
- Applied mathematical methods to deduct the key variant of the model and calculated using regression methods in Stata.
- Compared the three different anti-epidemic policies in China, the United States, and India, and concluded the optimal policies; Predicted the future spread trend of the Omicron variant.

## SKILLS

**Programming:** (Proficient) Python, MATLAB, M.S.Office; (Skilled) R, MySQL.

## AWARDS AND HONORS

- Honorable Mention Prize, COMAP MCM (COMAP Mathematical Contest in Modeling) **2022**
- Third Prize, APMCM (The Asia and Pacific Mathematical Contest in Modeling) **2021**
- Provincial First Prize, selected as a finalist, CMC (The Chinese Mathematics Contest) **2021**