**7PAM2002 Data Science Project Module**

**Choosing a Project Form**

**Semester B 2024/2025**

This form will be used by your supervisor to agree your project topic and dataset. Complete as much of the form as possible then submit the form into ‘Assignments’ on the Project Module Canvas site.

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**Course: 1 year / 2 year sandwich / 2 year Advanced Research** *(delete as appropriate)*

**Semester intake to the course: A / B (***delete as appropriate)*

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| SECTION A |  |
| **What is your proposed project title or topic?** | Mathematical Modeling for Stock Price Prediction and Portfolio Optimisation Using UK Daily Historical Stock Market Data (1988-2024) |
| **What is the Research Question for your project?** | How can mathematical models and data science techniques enable accurate stock predictions and portfolio optimisation while effectively handling financial risks for UK Daily Historical Stock Market Data from 1988 to 2024? |
| **Dataset website address (or organisation and person the dataset is from).** | [https:// datasets/eren2222/uk-daily-historical-stock-market-1988-2024](https://www.kaggle.com/datasets/eren2222/uk-daily-historical-stock-market-1988-2024) |
| **Where was the data originally collected? (who, when, where)** | The UK Daily Historical Stock Market Data (1988-2024) emerged from Eren2222's initial collection process, which ended with publication. The University of California-Riverside obtained the UK stock market dataset from 1988 until 2024, including daily data points. However, the study draws its data from published financial records and market exchanges, potentially including the London Stock Exchange and its partner financial institutions. This database presents historical stock price information, indices, and essential metrics for financial modelling needs. The dataset allows researchers and analysts to use it for predictive analytics and the development of investment strategies. |
| **What type of data are you using? (e.g., image/tabular/category/continuous etc)** | This dataset presents the UK Daily Historical Stock Market Data (1988-2024) with a structure organised in standard table format. Reviews aim to show all daily stock market performance data points through opening/closing prices, maximum/minimum rates, trading volumes, and adjusted closure data for multiple UK listings. This standardised database follows a chronological arrangement, enabling time-series analysis and financial modelling procedures. Tabular data format makes the dataset workable with machine learning algorithms, statistical tools, and visualisation software to support applications ranging from stock price projection to portfolio enhancement and risk assessments. The dataset is essential for researchers examining financial data to develop investment strategies. |
| SECTION B |  |
| Can you attend all 6 supervision sessions on-campus? If not state reason. | For now, I can but afterwards I will change my house. So it will cause problem to be at campus every week. |
| What was the subject of your BSc degree and any other Master’s degrees you have taken? | BS Mathematics |
| What are your career aims and/or the industry sector you would like to get into? | I aim to pursue a career in data science or financial technology (fintech), focusing on applying machine learning and mathematical models to financial markets for stock predictions and portfolio optimization. I am particularly interested in the intersection of data science and finance, where I can use data-driven strategies to improve investment outcomes and risk management. |
| A brief account of your programming/data science experience (including work or placement). | I have experience working with Python, R, and SQL, and am proficient in machine learning algorithms (e.g., regression, decision trees, time-series analysis). I have completed several projects, including my current project on stock price prediction and portfolio optimization. |
| Any work experience (including non-computing related). | I have worked as a research assistant, where I analyzed market data and applied statistical models to study financial trends. |
| Do you have any hobbies, activities or interests. | I enjoy reading about financial markets, machine learning advancements, and economic theory. Outside of academics, I am passionate about playing chess, which helps me sharpen my strategic thinking. |