**FINC612 Big Data and Machine Learning
Tools & Techniques**

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ASSIGNMENT 01

BIG DATA ANALYSIS and PORTFOLIO CONSTRUCTION

Semester 2, 2024

This is an <u>individual assignment</u> and contributes <u>25%</u> toward your final course mark.

Due date: 16 August at 5:00pm, 2024

Submission in <u>LEARN submission dropbox</u> and <u>Google Drive (GD)</u>.

(Check your GD for a shared folder from mfimlincoln22@gmail.com)

PART 1. Big Data Analysis (40 marks)

Big dataset analysis:

Choose a dataset of your interest from the two datasets below. You are required to use the big data analysis techniques learned in FIN612 to create a Google Colab notebook file (.ipynb) to report all possible information and insights from the dataset.

Data:

1- House advertisements in Georgia (USA) were collected on 12th November 2020 in JSON (house_3.json).
2- Customer information in the U.S. were collected in February 2023 in JSON (users_info.json).

PART 2. Portfolio Construction and Optimization (30 marks)

Portfolio Optimization

Use the optimization techniques learned in FINC612 to create a portfolio consisting of **5 to 8** different stocks (all traded in either the U.S. or UK market) using historical data from Yahoo Finance, spanning at least 5 years from the current time.

The portfolio's return should exceed the current inflation rate of the chosen country while you concern about the potential losses. Provide your notebook file (.ipynb), including brief reasons for selecting the stocks, the optimization methods used, the allocation details and other relevant information.

PART 3. Interaction Report (30 marks)

Use the provided dataset for Part 3 and apply the techniques learned in FINC612 to construct a **one-page** interactive report in Power BI format. The report should present important information and insights from the dataset. Please submit the .pbix file.

Data:

1- The last digit of your student ID from _0 to 4_: use _ecom_data01_,

2- The last digit of your student ID from _5 to 9_: use _ecom_data02_,

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A. Checklist

When you have completed this assignment, please check to ensure you have answered **ALL** the assignment questions and submit the following files:

Part 1:	Part 2:	Part 3:
File title: **P1-StudentID.ipynb**	File titles: **P2-StudentID.ipynb**	File titles: **P3-StudentID.pbix**

B. Marking Criteria

Marking Rubric is attached