Project Proposal

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Objective: Develop, optimize, and test two investment strategies using Python: one based on EMA12 and EMA26 crossover and the other using machine learning models (*Random Forest and XGBoost*) with multiple features *(SMA10, SMA60, EMA10, Momentum, RSI and further TI)*.

Data Description

Data source	Yahoo Finance - NVIDIA
Data Type	Daily stock prices (Open, Close, High, Low, Volume)
Time span	January 2018 - January 2024
In-sample/out-of-sample	20%-80%

Strategy Description

Strategy 1	
EMA12 and EMA26 Crossover Strategy	
Trading Signals	**Buy Signal:** EMA12 crosses above EMA26 **Sell Signal:** EMA12 crosses below EMA26
Conditions	Short-term EMA: 12 days Long-term EMA: 26 days
Strategy 2	
Machine Learning-Based Trading	
Model	Random Forest and XGBoost
Features	SMA10, SMA60, EMA10, Momentum, RSI
Trading Signals	Predicted by the ML model (buy/sell based on predicted price movements)

TeamWork

Task	Assigned to
Data Loading and Preprocessing	Afet Ibadova
EDA	Daryush Ray
Strategy 1	Afet Ibadova
Strategy 2	Daryush Ray
Performance Measures Calculation	Afet Ibadova
Optimization and Backtesting	Daryush Ray