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Project Description – ALPHA (α)

The software will be deployed to calculate average **PE Ratio** [1] and **other relevant measures** of a market index of choice (e.g. **S&P500** [2]) and then compare it with **PE and other ratios** of each **individual stock** listed in the chosen market index composition.

As starting point, by developing an **alpha version** of the software, the goal will be to select those stocks with relevant mispricing and whose **ratios** are undervalued relative to the current **market benchmark.**

General purpose of the software version will be to propose an efficient and automatic **portfolio selection (descriptive model),** assuring to the user (client) measurable active return against the index, so called **α** [3].

Later features, eventually added by developing **beta version**, will be the capability of the software to automatically build a **portfolio of stocks** and measure his performance against **historical events (diagnostic model – back test data**) and able to elaborate **future trends** prediction (**predictive-prescriptive model).**
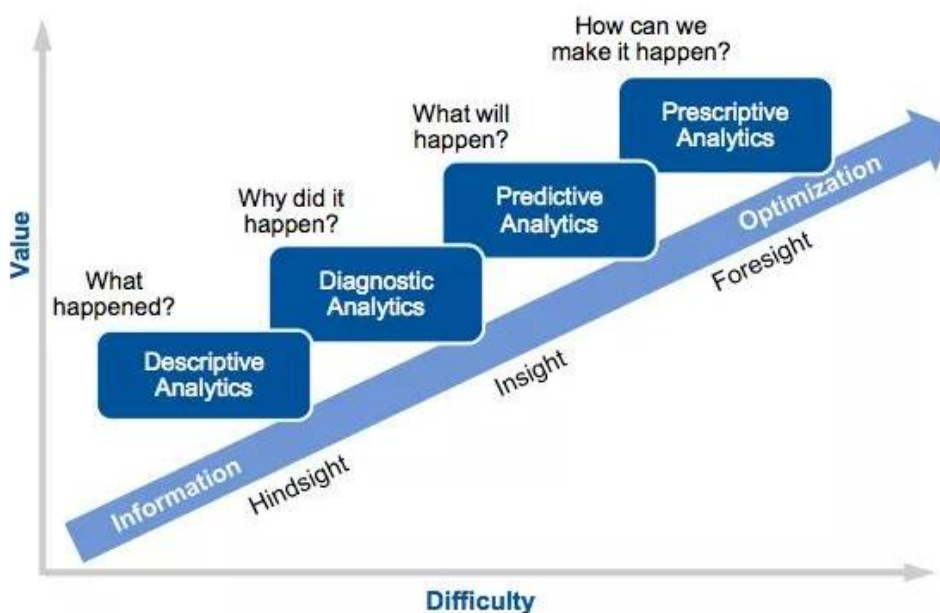
An efficient **automated financial advisor,** with given performance, that will be measurable against the current market index, according to **CAPM** [4]

In conclusion, we foresee the possibility to give some practical **day-trading** and **long-term signals**, by designing an **automatic update** of recent market data, and we are confident of the usability and application of the concept on **broader and different** datasets, once tested.

We will commit these two months to develop it and possibly improve it further also after this period, in order to make it a useful and reliable system for **personal use.**

Reference:

[1] https://en.wikipedia.org/wiki/Price%E2%80%93earnings_ratio

[2] https://www.marketwatch.com/investing/index/spx

[3] https://en.wikipedia.org/wiki/Alpha_(finance)

[4] https://en.wikipedia.org/wiki/Capital_asset_pricing_model

Python Modules:

- **pandas, numpy, matplotlib, sklearn – for data processing, visualization and machine learning**
- tkinter, easygui – for graphical user interfaces
- wit.ai – for speech recognition
- face_recognition – for facial recognition
- Python-sounddevice – for sound recording
- OpenCV – for image processing
- pygame – for creating games