
Finance and
Analytics Club
Summer Project Presentation

Projects

Customer Segmentation & Credit Risk Modelling

Mergers & Acquisitions

Predicting Stock Returns using Fama French and Capital Asset Pricing Model

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Option and Strategies to hedge a fund

IPO analysis through predictive modelling

Business analytics using python

1. Customer Segmentation & Credit Risk Modelling

Mentored by – Shivam Pandey & Nivin Vinod

What is Customer Segmentation?

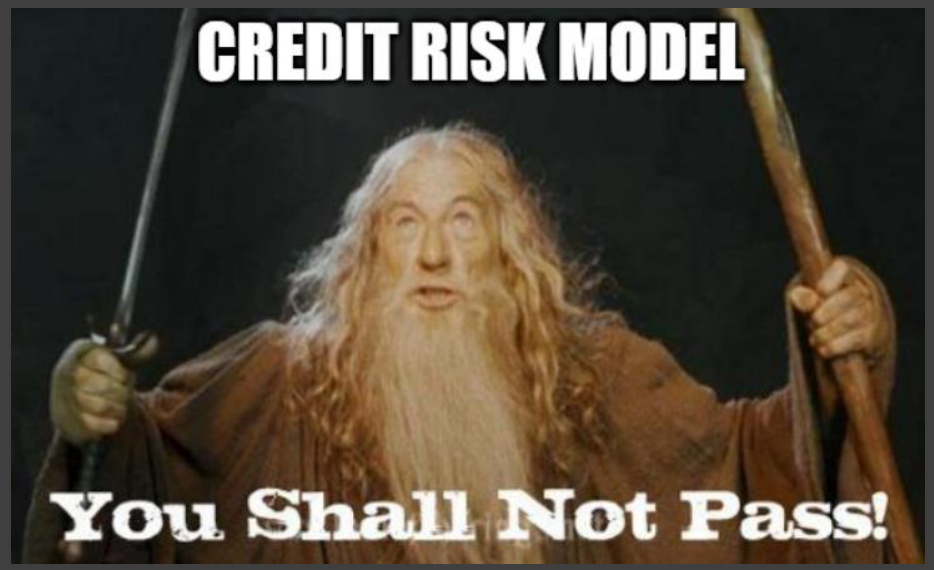
Basically, dividing customers based on their common characteristics or “clustering”.

You will learn how to do this with large amount of data

What is Credit Risk?

Before giving out loans to a person entities such as banks need to assess the risk involved and how likely the person is to return the credit(or assess the risk of defaulting).

Credit risk models are used to quantify the probability of default or prepayment on a loan



TOPICS TO BE COVERED	
Week 1	Introduction of project(explaining terms and methods employed). Data exploration and learning python basics
Week 2	Hierarchical and K-means clustering, Dimensionality reduction using PCA. Reducing correlation and choosing optimal number of principal components
Week 3	Employing the PCA in the clustering analysis, Model evaluation, Hyperparameter tuning
Week 4	Basics of Credit Risk Modelling(terms and techniques used)
Week 5	Weight of evidence and information value, Discretize numerical features
Week 6	Model training and prediction, Developing score card and calculating credit score for test set, Setting Loan approval cut-offs

Schedule & Workload

- Expected Workload – 6-7 hours per week
- We will meet 2-3 times weekly to discuss doubts and assignments
- Expected number of students : 25-30
- Knowledge of Python libraries is a plus

2. Mergers & Acquisitions

Mentored by – Shubham Gupta, Divyansh Agarwal and Shivam Pandey

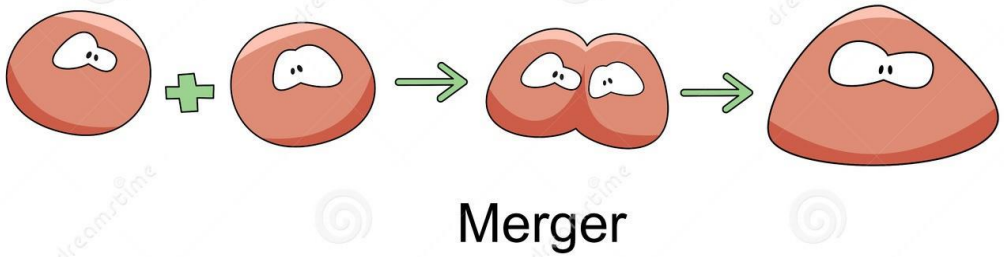
WHAT?

- Merger : combination of two companies to form one
- Acquisition : one company taken over by the other

Acquisition

WHY?

- Synergy
- Diversification
- Supply chain pricing
- Eliminate competition



Merger

HOW?

- Stock payment/Equity financing
- Valuation approaches
- Accretion (Dilution) Analysis

Topics to be covered	
Week 1	Recent Case studies of M&A – Financial Indicators and Analysis
Week 2	DCF Valuation, Estimating weighted cost of capital and long-term growth
Week 3	EPS (Accretion/Dilution) Valuation, financial synergy
Week 4	Football Field Relative Valuation
Week 5	LBO (Leveraged Buyout) Introduction
Week 6	Final case study

Schedule & Workload

- Expected Workload – 6-7 hours per week
- We will meet 2-3 times weekly to discuss doubts, assignments and case studies
- Expected number of students : 25-30

3. Predicting Stock Returns using Fama French and CAPM

Mentored by – Aditya Anand,
Satvik Chandra Shukla and
Navneet Singh

What is Capital Asset Pricing Model?

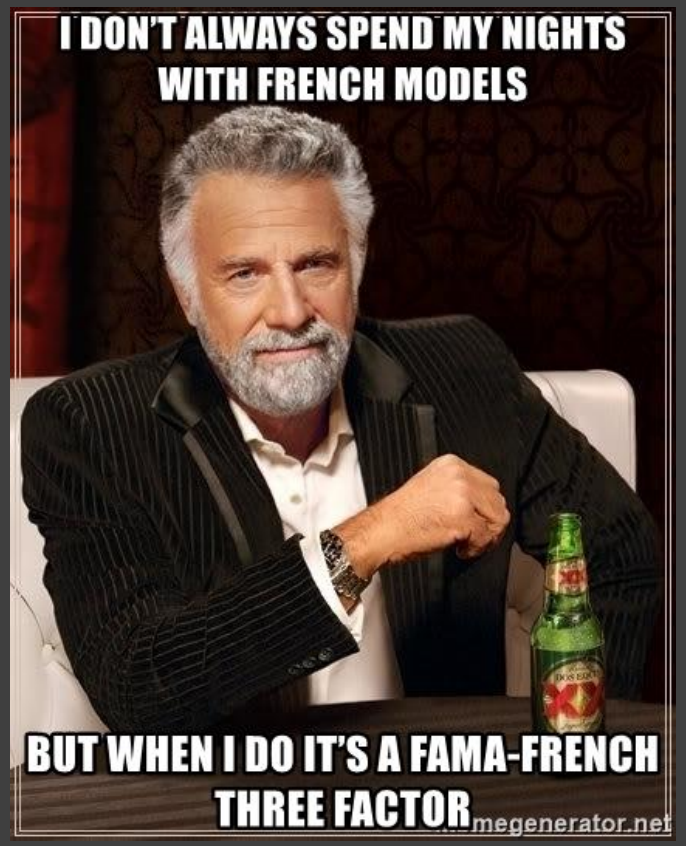
CAPM is the relationship between systematic risk and expected return for assets, particularly stocks.

In this project, we will learn theory behind the model and its implementation using Python.

What is Fama French Three-Factor Model?

Fama French is extended CAPM model, which incorporates 2 extra term, which is **outperformance of small-cap companies** and **high book-to-market value** companies.

We will include this in the existing CAPM model, and explore more about Fama French 5-factor model.



	Topics to be covered
Week 1	Jupyter notebook/Google Collab, Python Libraries
Week 2	Getting started with CAPM model, Basics Statistics
Week 3	Implementation of CAPM model using Python
Week 4	Learning about Fama French Three-Factor model
Week 5	Implementing Fama French Model using Python
Week 6	Doing the analysis on different type of stocks & currencies. And reading about Fama French 5 factor model.

Schedule & Workload

- Expected Workload – 4-5 hours per week
- We will meet 1-2 times weekly to discuss doubts, assignments and progress of project.
- Expected number of mentee : 30-40

4. Option and Strategies to Hedge a corpus

Mentored by – Sujal Harkut,
Yash Manihar, Aditya Anand

Why

₹ Ever wondered how do people make thousands of rupees each day through stock market.

 Wanted a risk free entry to the stock world.

 What do people do in Finance Profile/Quant Jobs

Options

An option is a contract giving the buyer the right to buy or sell an underlying asset at a specific price on or before a certain date.

Hedging

Hedging with options involves opening a position – or multiple positions – that will offset risk to an existing trade.

	TOPICS TO BE COVERED
Week 1	Basic Study of Stock Terminologies, Put and Call Option and what is hedging
Week 2	First two basic Option Strategies
Week 3	Next two basic Option Strategies
Week 4	Study of respective strategy and deriving its greek functions
Week 5	implementing on Opstra(Or any other platform)
Week 6	Backtesting and Frontesting the strategies

Schedule & Workload

- Expected Workload – 6-7 hours per week
- We will meet 3 times weekly to discuss strategies and doubts.
- Expected Mentees- 15-20

5. IPO analysis through predictive modelling

Mentored by – Dakshita Mittal, Gaurav Raj, Sujal Harkut

What is an IPO?

An initial public offering (IPO) refers to the process of offering shares of a private corporation to the public in a new stock issuance.

This project will focus on IPO valuation and grading and the process of underwriting.

What are Forward-Looking Statements?

Forward-looking statements (FLSs) have informational value in applications such as predicting stock prices and providing prospective information about the company's future growth and performance.

This project focuses on evaluating the relationship between features extracted from FLSs and IPO valuation.

	Topics to be covered
Week 1	Introduction to IPOs, basic terminologies and fundamentals.
Week 2	Basic python and BeautifulSoup library, additional fundamentals of DRHPs and FLSs.
Week 3	Extraction of financial statements from DRHPs using data scraping.
Week 4	Fundamentals of ratio analysis and introduction to FLSs, basic machine learning and deep learning algorithms
Week 5	Identification of FLSs using ML model on the data scarped.
Week 6	IPO valuation prediction and grading.

Schedule & Workload

- Expected Workload – 5-6 hours per week
- We will meet 1-2 times weekly to discuss doubts, assignments and progress of project.
- Expected number of students: 30

6. Business analytics using python

Mentored by –

Bhavya Sikarwar,

Vinit Toshniwal

& Dakshita Mittal

What is business analytics

Taking in and processing historical business data

Analyzing that data to identify trends, patterns, and root causes

Making data-driven business decisions based on those insights

Why is business analytics used :

Better understand consumer behaviour

Gain insight into their competitors

Identify market trends

Measure accomplishments against goals

Optimize operations

	TOPICS TO BE COVERED
Week 1	Introduction to analytics, Use cases, IDEs, GIT etc.
Week 2	Basic Data Structure, Libraries, Managing indexes, Group Summaries, Crosstab, Various types of Joins, merge, Managing indexes in pandas ,Scaling of Data
Week 3	Basics of probability, statistics and graphing methods: Linear and multiple regression
Week 4	Decision trees and cluster analysis
Week 5-6	Work on specific projects on business analytics

Schedule & Workload

- Expected Workload 7-8 hours per week
- We will meet once or twice weekly to discuss doubts, assignments and progress of project.
- Expected number of mentees: 30-40

Selection Process:

- Depending on number of response we may conduct a preliminary test.

Coordinators:

Aditya Anand

Dakshita Mittal

Shivam Pandey

Sujal Harkut

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Thank You

'Ek cool sa finance quote'