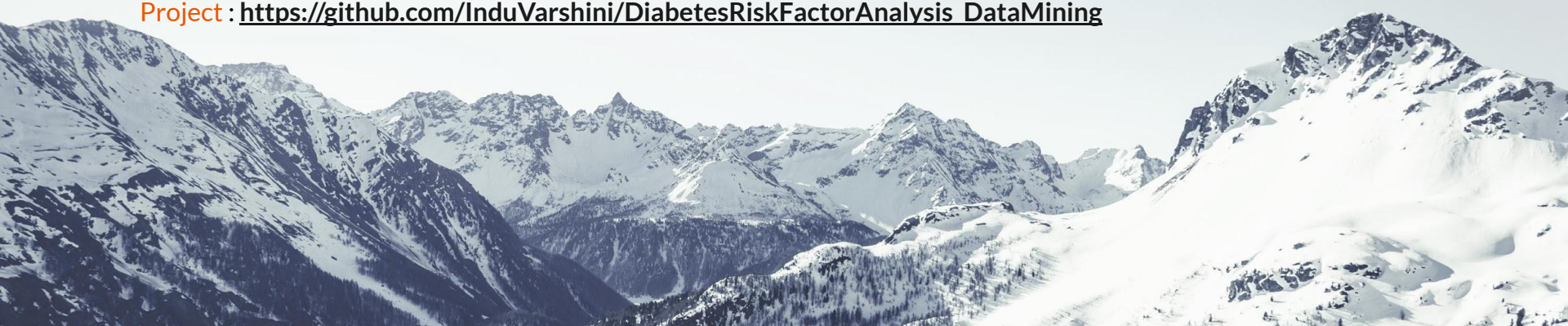
# Diabetes Risk Factors

## Case Study

Dataset : **https://www.kaggle.com/johndasilva/diabetes**

Project : **https://github.com/InduVarshini/DiabetesRiskFactorAnalysis_DataMining**



# Overview

**Diabetes** mellitus, commonly known as diabetes, is a **metabolic disease** that causes high blood sugar. People with diabetes have an **increased risk** of developing a number of **serious health problems**. They also have a **higher risk of developing infections**. In almost all high-income countries, diabetes is a **leading cause of cardiovascular disease**, blindness, kidney failure, and lower limb amputation. Although several factors are considered to lead to diabetes, it would be worth enough to **find the most predominant factors** causing this problem to gain a better understanding of the issue. We aim to apply **data mining** and statistical analysis techniques to **identify** the **dominant factors** causing diabetes in people.

# Approach

1

### Preprocessing & EDA

Univariate and Bivariate Analysis, Correlation Analysis, Missing values treatment, Handling Outliers, Analysis of Data Distribution.

2

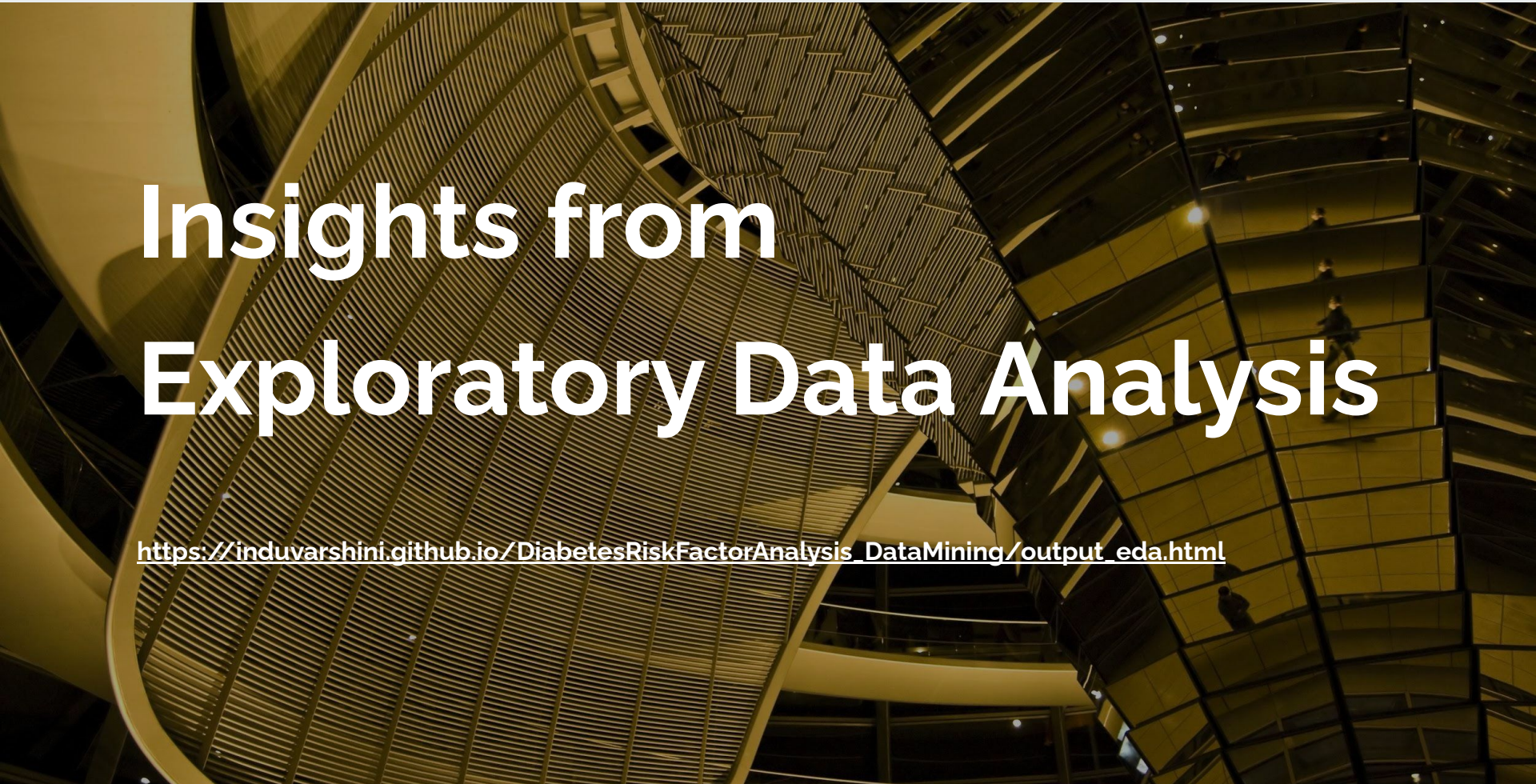
### Data Mining & Statistical Analysis

SMOTE algorithm for balancing the dataset, Cross-validation to avoid Over-fitting, Decision Tree, Support Vector Machine for modelling and Boosting techniques to increase the prediction accuracy.

3

### Identify interesting patterns

Pose some questions over the data and apply the suitable techniques to gain insights. Visualize and provide conclusion over the risk factors of Diabetes.



# Insights from Exploratory Data Analysis

https://induvarshini.github.io/DiabetesRiskFactorAnalysis_DataMining/output_eda.html

1. Imbalanced Dataset - **OVERSAMPLING** using SMOTE technique.

2. **Blood Pressure** feature has a **Normal distribution**.

3. All most **all features** except Glucose **has outliers.**

4. Features such as Pregnancies, Skin Thickness, Insulin, BMI, Diabetes Pedigree Function is all **RIGHT-SKEWED.**

5. **Pregnancies, Blood Pressure, Skin Thickness, Glucose** increases as Age increases.

6. Blood Pressure, and **Skin Thickness increases as BMI increases.**

7. **Glucose**, Skin Thickness and BMI increases as **Insulin increases.**

8. **Blood Pressure**, Skin Thickness, **Insulin** and **BMI increases as Glucose increases.**

# Correlation Analysis

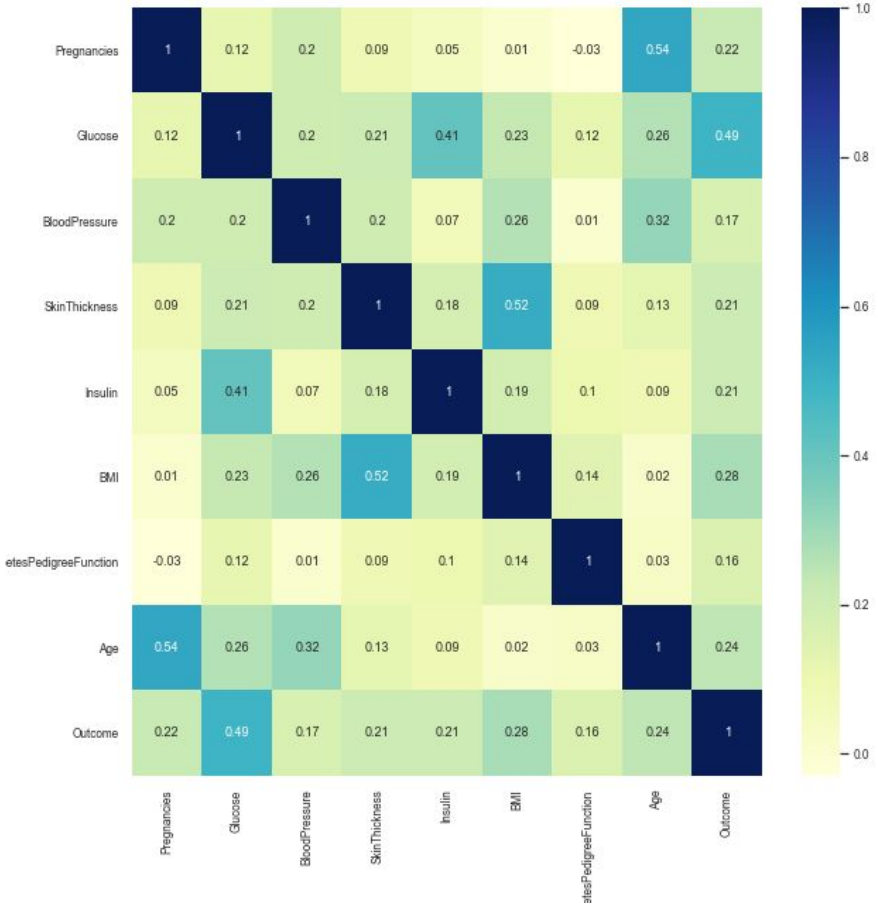
*Highly Correlated Features :*

Age - Pregnancies

Skin Thickness - BMI

Glucose - Outcome

Glucose - Insulin



# The Team:

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# Thank you.