# STUDENT DETAILS

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| Name: | Gaurav Haritas |
| SkillsBuild Email ID: | chinuharitas@gmail.com |
| College Name: | Dronacharya College Of Engineering, Gurgaon |
| College State: | Haryana |
| Internship Domain: | Artificial Intelligence |
| Internship Start Date: | 12th June 2023 |
| Internship End Date: | 24th July 2023 |

# Problem Statement

The problem statement for this project is to develop an "AI Mental Fitness Tracker" that accurately tracks the mental fitness of individuals based on various factors such as Schizophrenia, Eating Disorders, Drug Use, Alcohol Use, and Depression. The project aims to analyze and predict mental fitness percentages in different countries from 1990 to 2021 using machine learning algorithms.

# Agenda

The agenda for the presentation will be as follows:

- Project overview
- Target audience and their needs
- Solution and value proposition
- Customization and uniqueness of the solution
- Modeling techniques and methodologies
- Results and outcomes

# Project Overview

The project focuses on creating an AI Mental Fitness Tracker that utilizes machine learning algorithms to track mental fitness percentages across different countries from 1990 to 2021. The purpose of the project is to provide insights into the mental health trends over time and identify patterns related to Schizophrenia, Eating Disorders, Drug Use, Alcohol Use, and Depression. The project aims to raise awareness about mental health and enable better understanding and analysis of mental fitness data.

# Who are the End Users

The target audience for this project includes researchers, mental health professionals, policymakers, and organizations working in the field of mental health. These individuals and organizations can benefit from the insights provided by the AI Mental Fitness Tracker, as it allows them to understand the prevalence and trends of mental health disorders in different countries over the years. The solution can also help in identifying areas that require more attention and resources for improving mental health services.

# My Solution & its Value Proposition

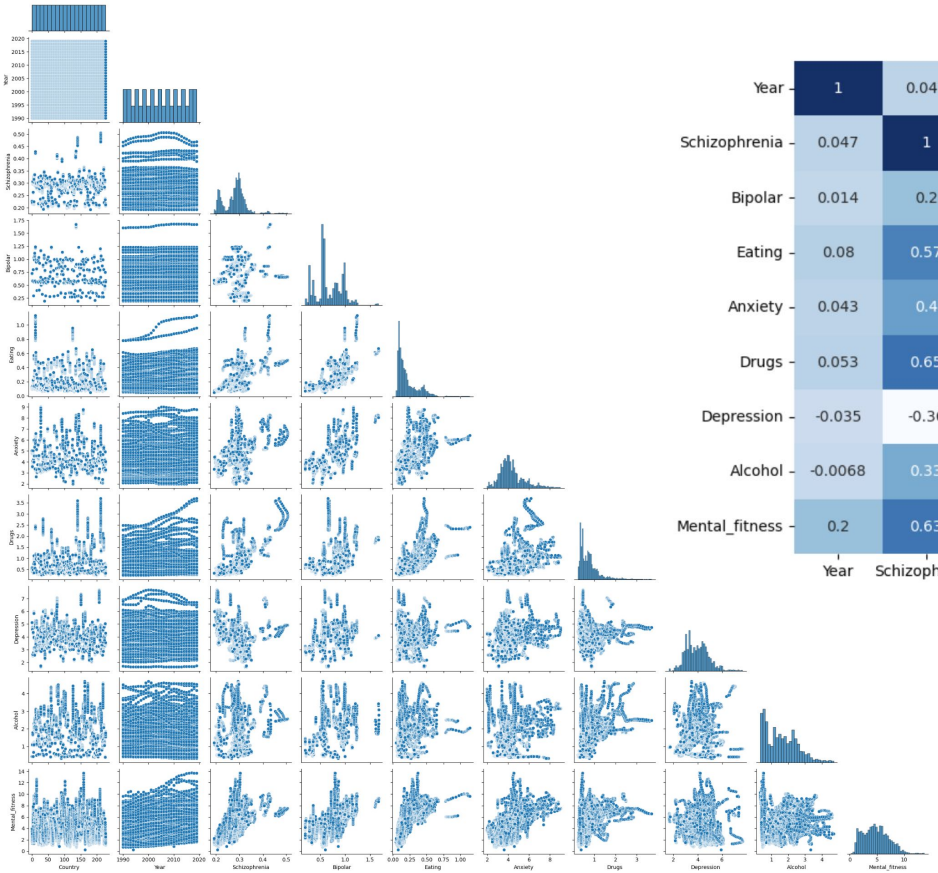
The AI Mental Fitness Tracker utilizes machine learning algorithms, specifically Linear Regression and Random Forest, to predict mental fitness percentages based on data related to Schizophrenia, Eating Disorders, Drug Use, Alcohol Use, and Depression. By providing accurate predictions, the solution helps end users gain a deeper understanding of the mental health landscape. The value proposition lies in the ability to identify patterns and trends, enabling informed decision-making for interventions, resource allocation, and policy development related to mental health.

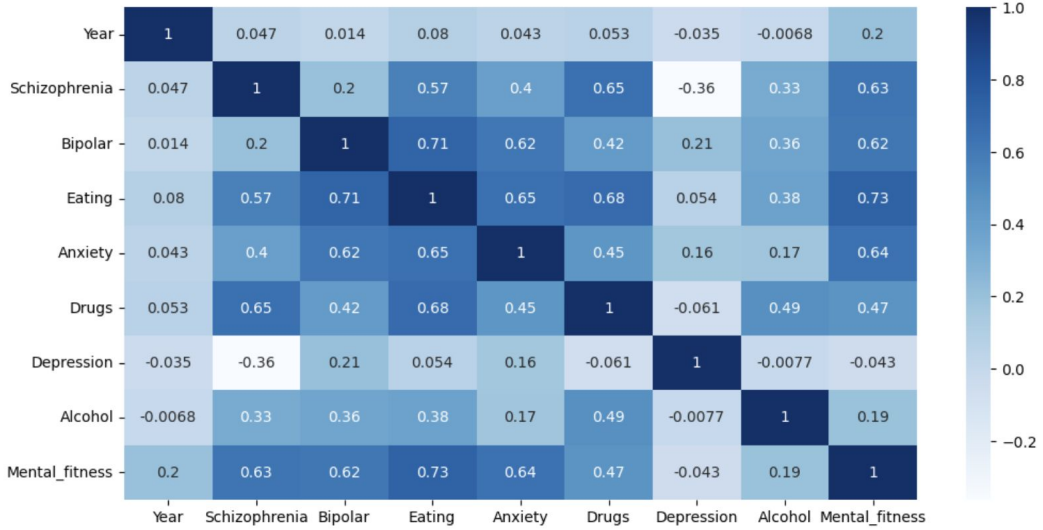
# How did you customize the project and make it your own?

This project stands out by focusing on a comprehensive set of mental health indicators and utilizing machine learning algorithms to predict mental fitness percentages. The customization includes collecting and analyzing data from various sources, training the models specifically for mental health prediction, and adapting the algorithms to the unique characteristics of mental health datasets. The project's innovation lies in its application of AI and machine learning techniques to address mental health concerns on a global scale.

# Modeling

The project utilizes two main modeling techniques: Linear Regression and Random Forest. Linear Regression is used to establish a linear relationship between the mental health indicators and the predicted percentages. Random Forest, on the other hand, employs an ensemble of decision trees to capture complex relationships and interactions between the variables. By leveraging these techniques, the models are trained to accurately predict mental fitness percentages for different countries and time periods.






Here we can see that, "Eating Disorder" is positively correlated with "Mental_fitness" and vice-versa

# Results

The results demonstrate that the Random Forest algorithm outperforms Linear Regression in predicting mental fitness percentages based on the given dataset. The accuracy and effectiveness of the Random Forest model indicate its superior ability to capture non-linear relationships and handle complex interactions among the mental health indicators.

# Machine Learning Algorithms Results

## Linear Regression

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The Model Performance for TRAINING SET
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Mean Squared Error MSE : 1.389959372405798
Root Mean Squared Error RMSE : 1.1789653821914357
R Square Error R2 : 0.7413245790025275



The Model Performance for TESTING SET
--------------------------------------
Mean Squared Error MSE : 1.1357545319272384
Root Mean Squared Error RMSE : 1.0657178481789813
R Square Error R2 : 0.7638974087055272
```

## Random Forest Regressor

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The Model Performance for TRAINING SET
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Mean Squared Error MSE : 0.005192948837124765
Root Mean Squared Error RMSE : 0.072062117906184
R Square Error R2 : 0.9990335773452597


The Model Performance for TESTING SET
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Mean Squared Error MSE : 0.0297755922378226
Root Mean Squared Error RMSE : 0.1725560553496243
R Square Error R2 : 0.9938101990464892
```

# Links

Ai Mental Fitness Tracker: *Click Here*

Datasets : *Click Here*

Prerequisites Learning: *Click Here*

Github: *Click Here*