STUDENT DETAILS

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College State : Karnataka

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 Eating Disorders, Drug Use, Depression, Alcohol Use and Schizophrenia. This project aims to analyse and predict mental fitness percentage in different countries from 1990 to 2021 using machine learning algorithms.

Agenda

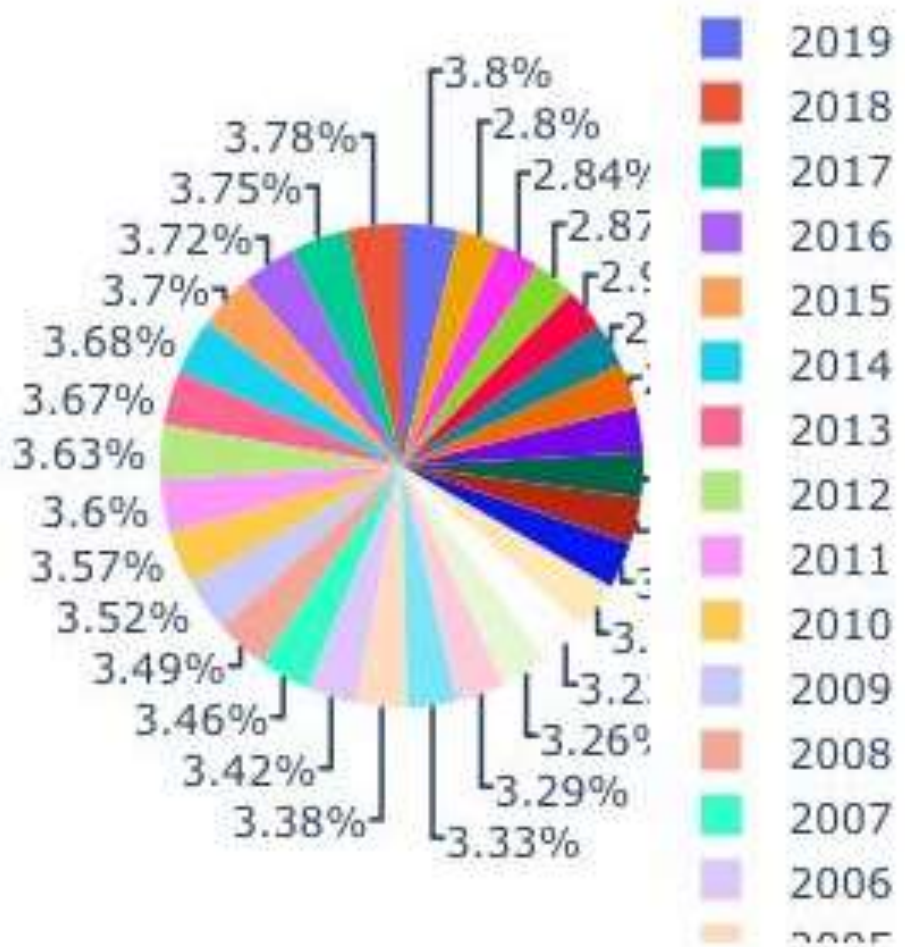
The agenda of this presentation is as follows:

- Project Overview
- Target audience and their needs
- Solution and value proposition
- Customization and uniqueness of the solution
- Modelling Technique 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 fro 1990 to 2021. The purpose of the project is to provide insights into the mental health trends over time and identify patterns related to Eating Disorders, Drug Use, Depression, Alcohol Use and Schizophrenia. This project aims to raise awareness about mental heath and enable better understanding and analysis of mental fitness data


Country
Afghanistan
African Region (WHO)
Albania
Algeria
American Samoa
Andorra
Angola
Antigua and Barbuda
Argentina
Armenia
Australia
Austria
Azerbaijan
Bahamas
Bahrain
Bangladesh
Barbados
Belarus
Belgium
mental_fitness
1990
2000
2010
2020
Year


3.8%
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3.72%
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3.49%
3.46%
3.42%
3.38%
3.33%
3.29%
3.26%
2019
2018
2017
2016
2015
2014
2013
2012
2011
2010
2009
2008
2007
2006

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.

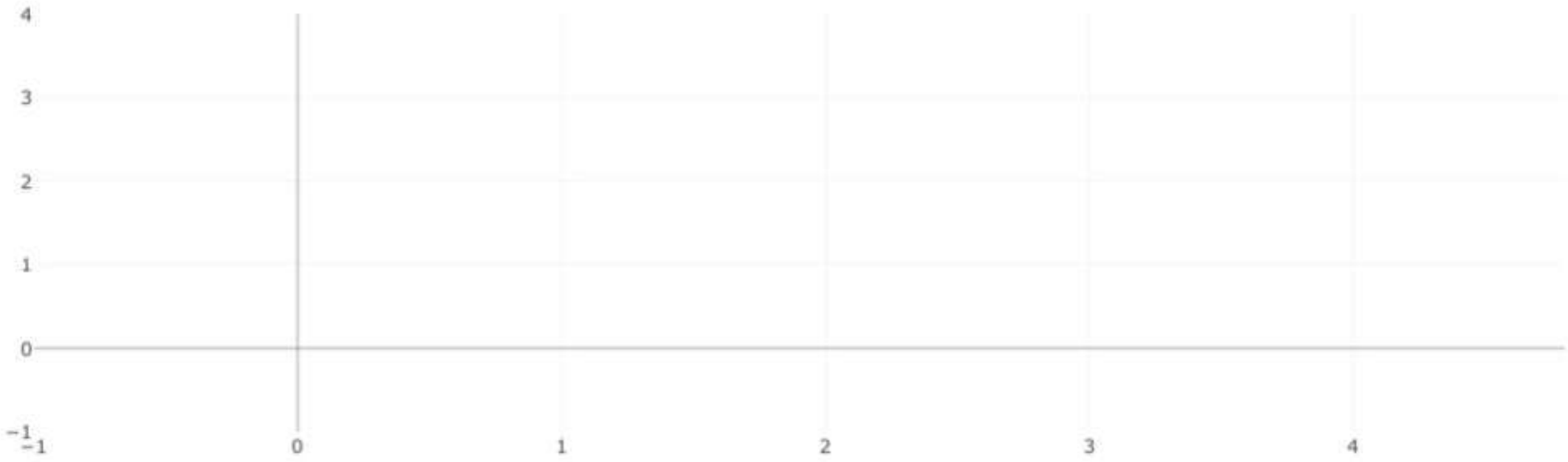
My Solution & it's Value Proposition

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 I customize the project and made it my 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. I also tried converting this tracker to a web page and showing different countries with different mental disorders as a graphical representation.

MENTAL FITNESS TRACKER

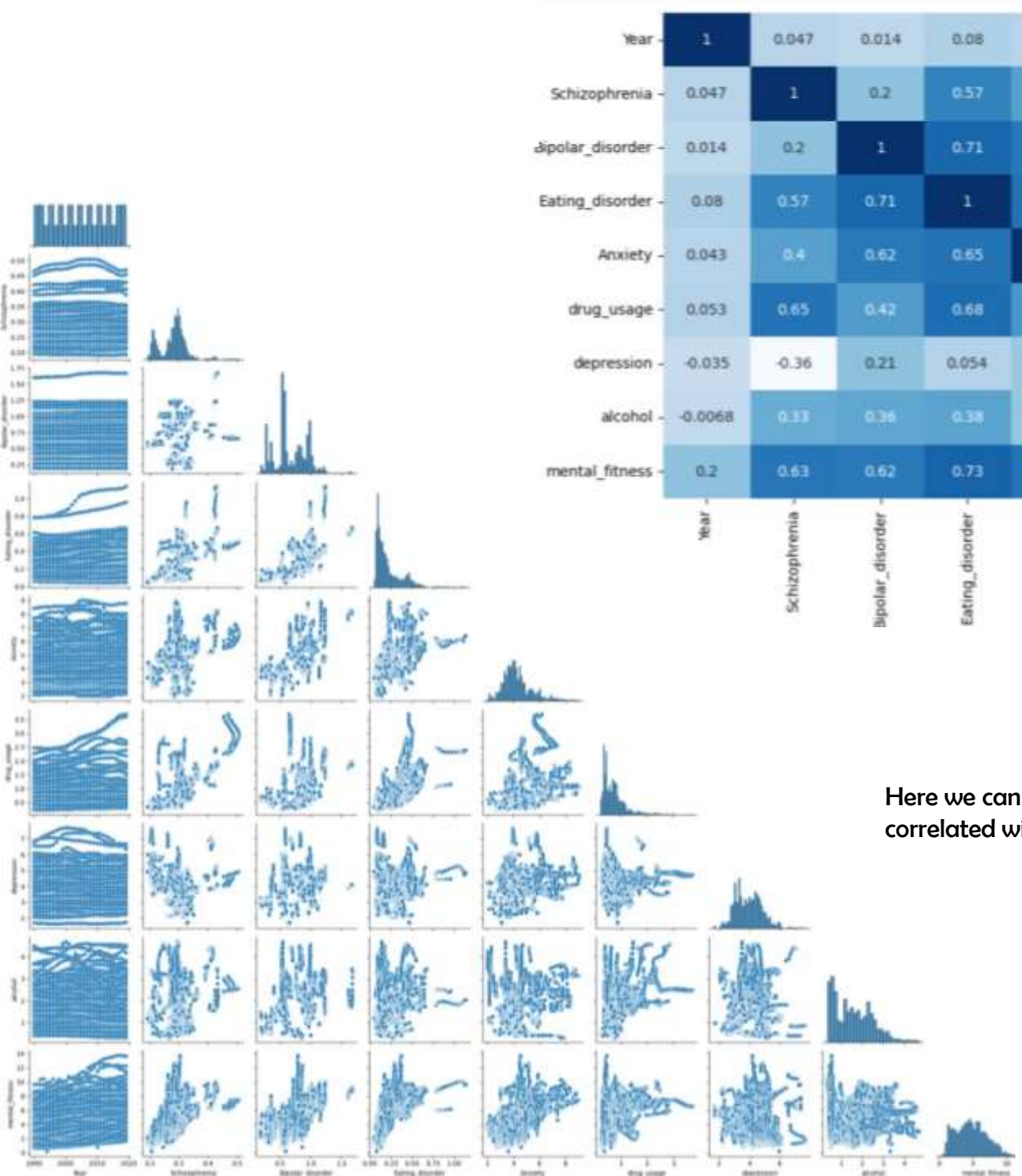


colorscale

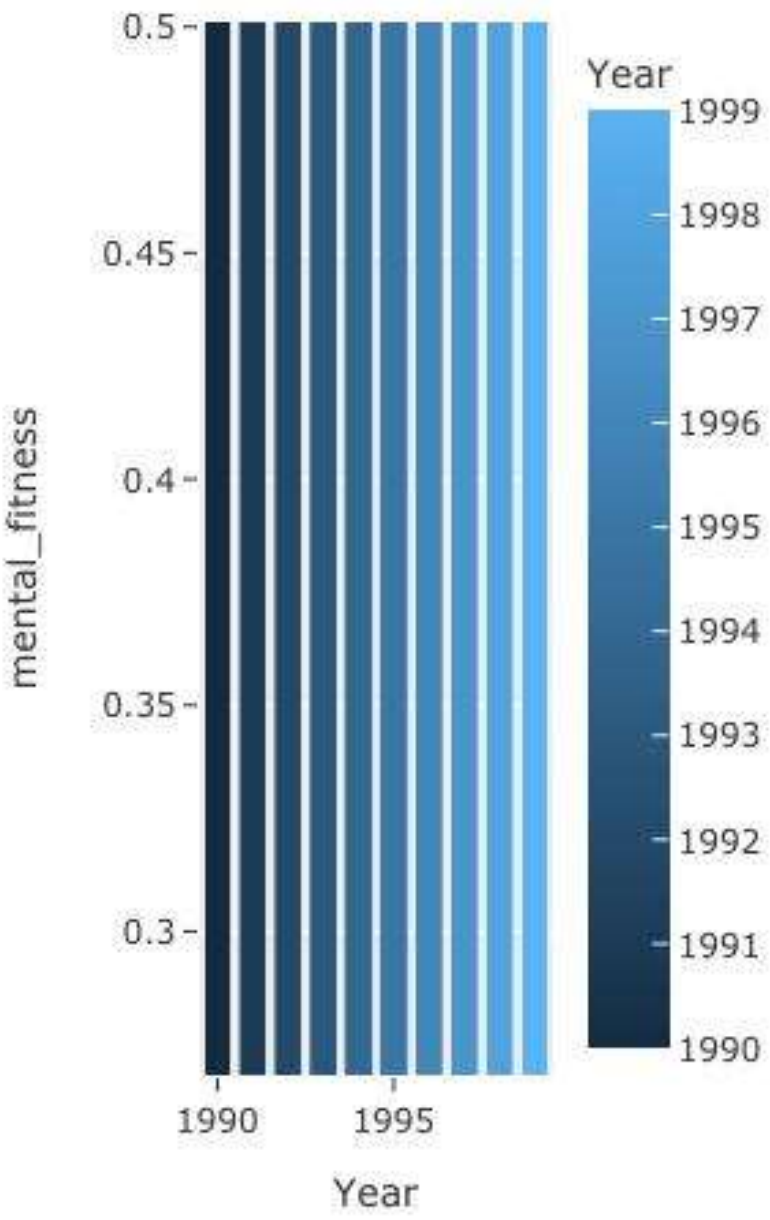
plasma

Modelling

The project utilizes two main modelling 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


0.5
0.45
0.4
0.35
0.3
mental_fitness
1990
1995
Year
Year
1999
1998
1997
1996
1995
1994
1993
1992
1991
1990

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 Algorithm Results

Linear Regression

```
The model performance for training se
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MSE is 1.389959372405798
RMSE is 1.1789653821914357
R2 score is 0.7413245790025275


The model performance for testing set
--------------------------------------
MSE is 1.1357545319272384
RMSE is 1.0657178481789813
R2 score is 0.7638974087055272
```

Random Forest Regression

```
The model performance for training se
--------------------------------------
MSE is 0.0049728469219023 31
RMSE is 0.07051841548065534
R2 score is 0.9990745389422048


The model performance for testing set
--------------------------------------
MSE is 0.030885497956226016
RMSE is 0.17574270384919544
R2 score is 0.9935794699506845
```

Links

AI Mental Fitness Tracker : click here

Prerequisite Learning : Click here

Github : click here