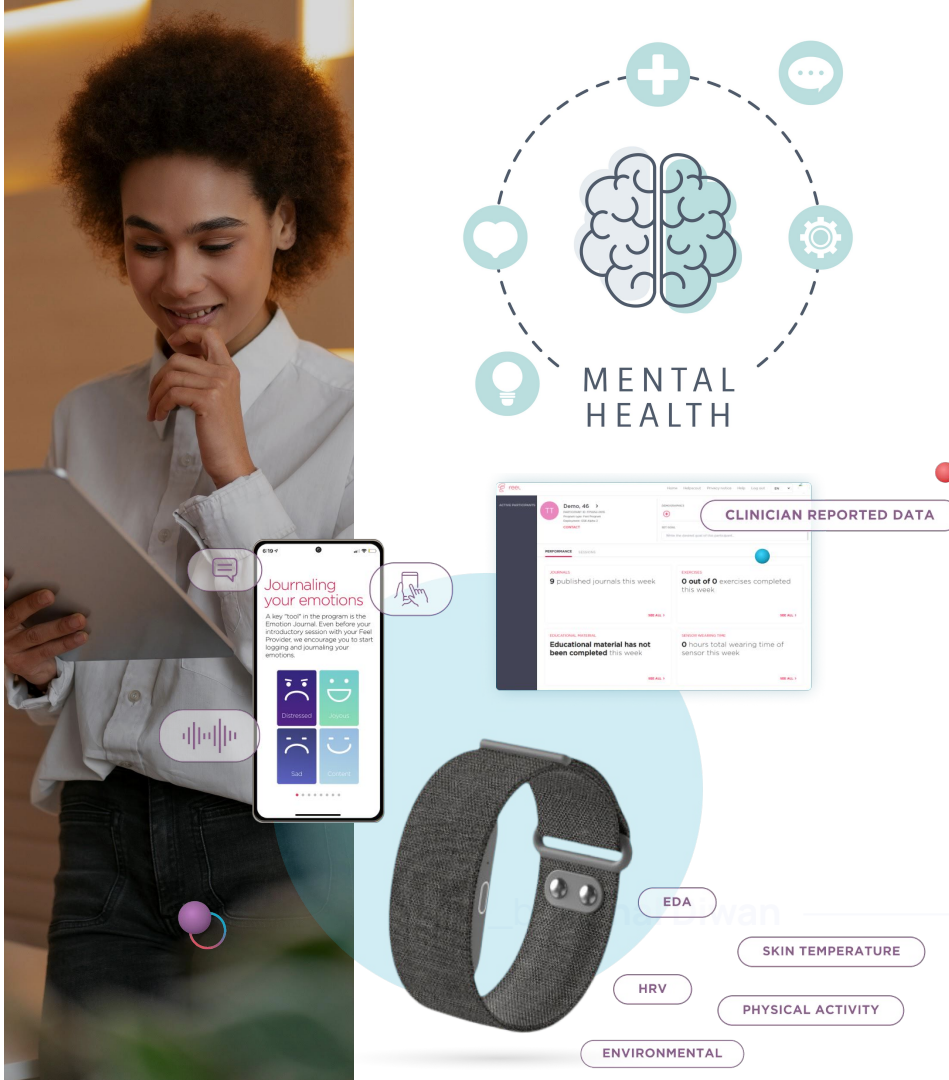
Mental Fitness Tracker

Artificial Intelligence



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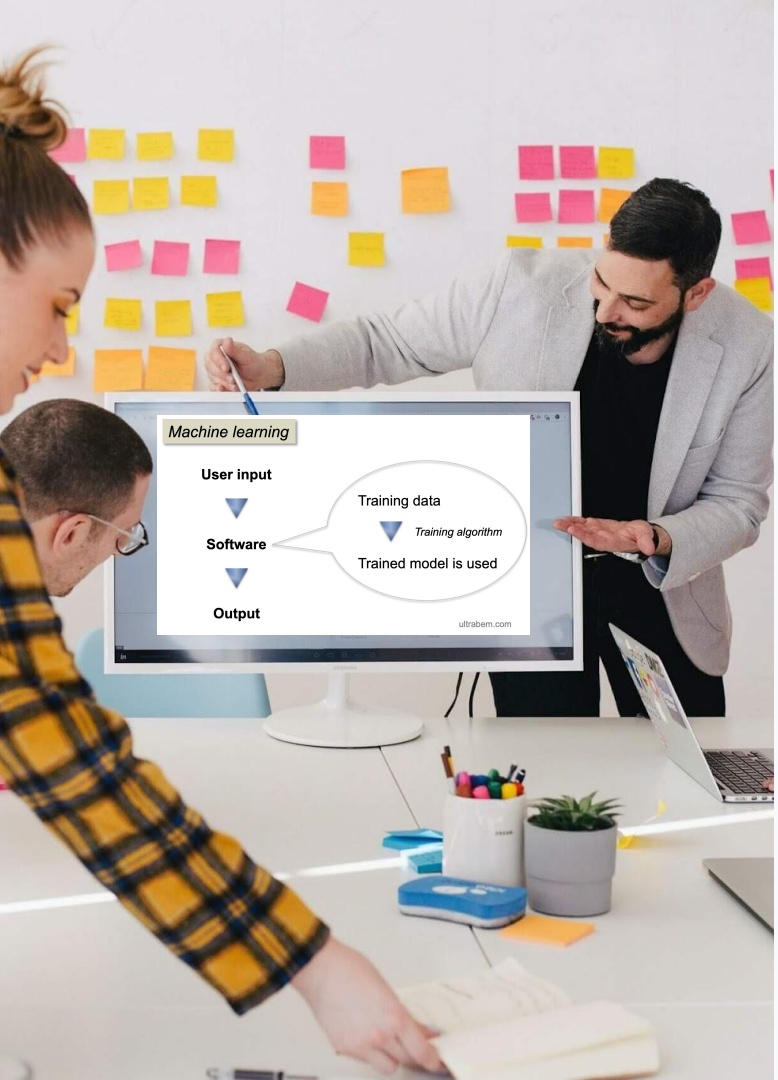

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1 Problem statement

- The state of one's mental health has become increasingly important to overall wellbeing in the fast-paced, demanding world of today.
- People of all ages and occupations are becoming more and more affected by stress, anxiety, depression, and other mental health disorders.
- People are becoming more proactive in researching strategies to enhance and keep track of their mental fitness as awareness of mental health rises.

02

Agenda of the project

Agenda

This Artificial Intelligence (AI) project aims to create a Mental Fitness Tracker that makes use of cutting-edge algorithms and data analysis to assist people in tracking, managing, and enhancing their mental health.

In order to give users personalised insights, recommendations, and assistance so they can live healthier and happier lives, the tracker will make use of AI technology.

Project Overview

The purpose of the Mental Fitness Tracker project is to create an AI-based platform that will help people efficiently monitor, maintain, and enhance their mental health. The project's goal is to develop a comprehensive system that makes use of AI algorithms to identify emotions, examine user data, and provide unique insights and suggestions. With its accessible and user-friendly features, The Mental Fitness Tracker will concentrate on meeting the mental health demands of a large user base.

The AI system will detect signs of stress and anxiety from user interactions, providing timely notifications and recommendations.

Users will be able to set mental fitness goals and track their progress toward achieving them.
The project will ensure that user data is handled securely and comply with relevant data protection regulations.

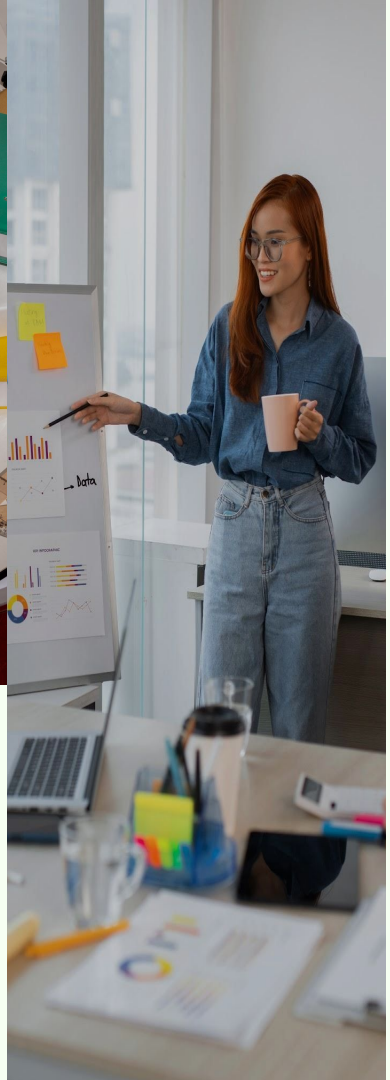
Monitor user feedback and performance metrics to identify areas for improvement.
Regularly update and refine the AI models based on new data and research.

4. Target Users

People of all ages and backgrounds who are interested in actively managing their mental health should be catered to by the mental fitness tracker.

It need to be *easy to use, available, and considerate of cultural differences.*

mental health



5. Solution

1. We are applying a machine learning model on training and testing data to examine how mental fitness is impacted.

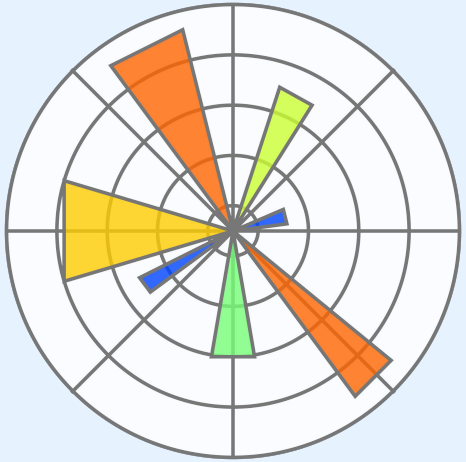
2. We used a data set with several attributes that illustrate how mental well-being is influenced.

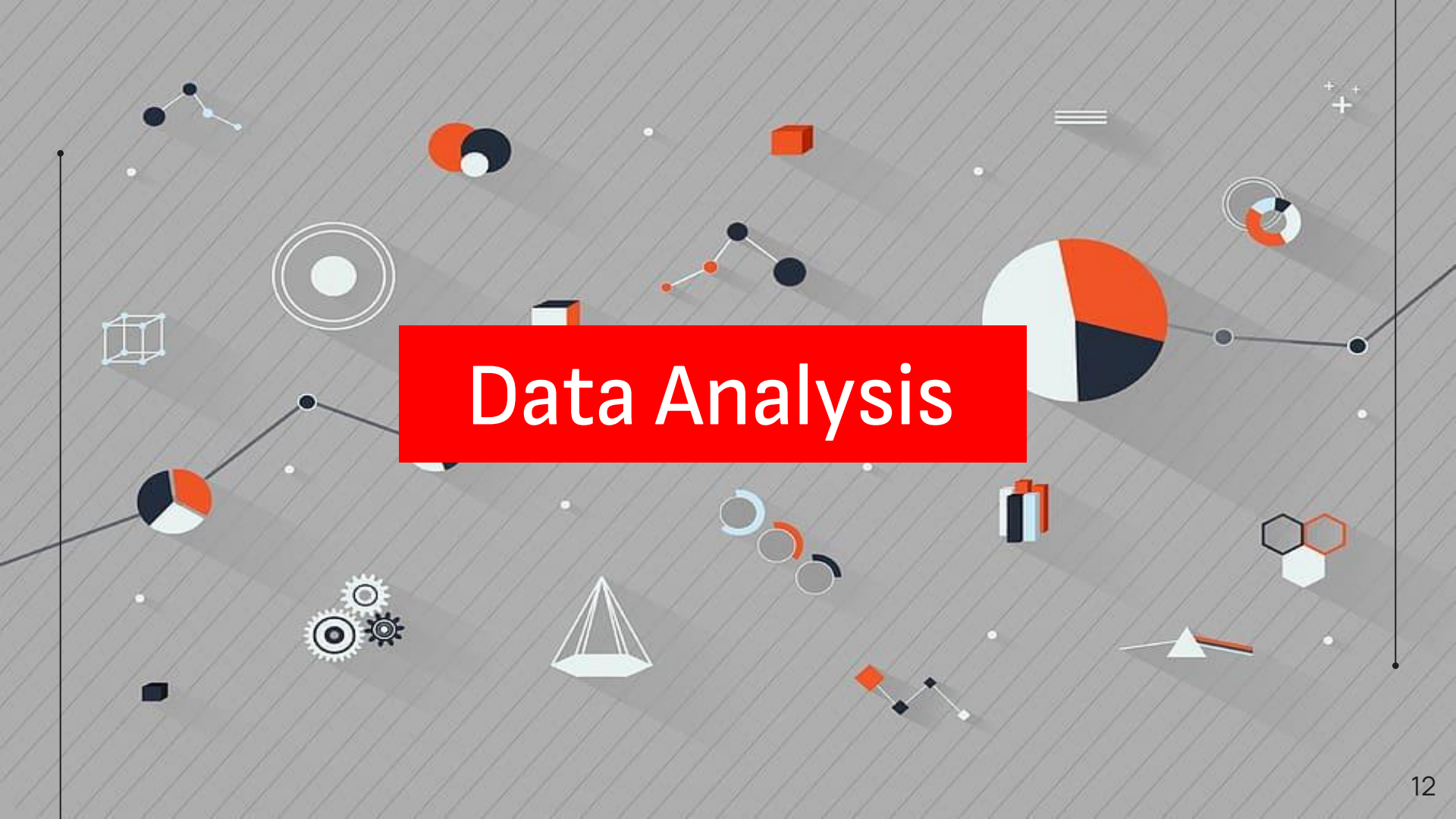
3. Then, we conducted analysis to determine the correlation between various features.

4. used a linear regression model and a random forest regressor to compare the value of R^2.

Tools Used

machine learning in Python




Data Analysis

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MentalFitnessTracker.ipynb ☆

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[3] 1s
```
# Step 1: Import the required libraries
import numpy as np
import pandas as pd
from sklearn.linear_model import LinearRegression
from sklearn.model_selection import train_test_split
from sklearn.metrics import mean_squared_error, r2_score
```

[4] 0s
```
# Step 2: Load your dataset from the CSV file
data = pd.read_csv("prevalence-by-mental.csv")
```

[5] 1s
```
import warnings
warnings.filterwarnings('ignore')
```

[6] 32s
```
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

[7] 1s
```
import seaborn as sns
import matplotlib.pyplot as plt
import plotly.express as px
```

Exploratory data Analysis

[8] 0s
```
data2 = pd.read_csv("mental-disease -AI.csv")
```

[9] data.head()

+ Code + Text

0s
```
data1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 6840 entries, 0 to 6839
Data columns (total 11 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Country        6840 non-null   object
 1   Year           6840 non-null   int64
 2   Schizophrenia  6840 non-null   float64
 3   Bipolar        6840 non-null   float64
 4   Eating         6840 non-null   float64
 5   Anxiety        6840 non-null   float64
 6   Drug use       6840 non-null   float64
 7   Depressive     6840 non-null   float64
 8   Alcohol        6840 non-null   float64
 9   Code           6150 non-null   object
 10  MentalFitness  6840 non-null   float64
dtypes: float64(8), int64(1), object(2)
memory usage: 899.3+ KB
```

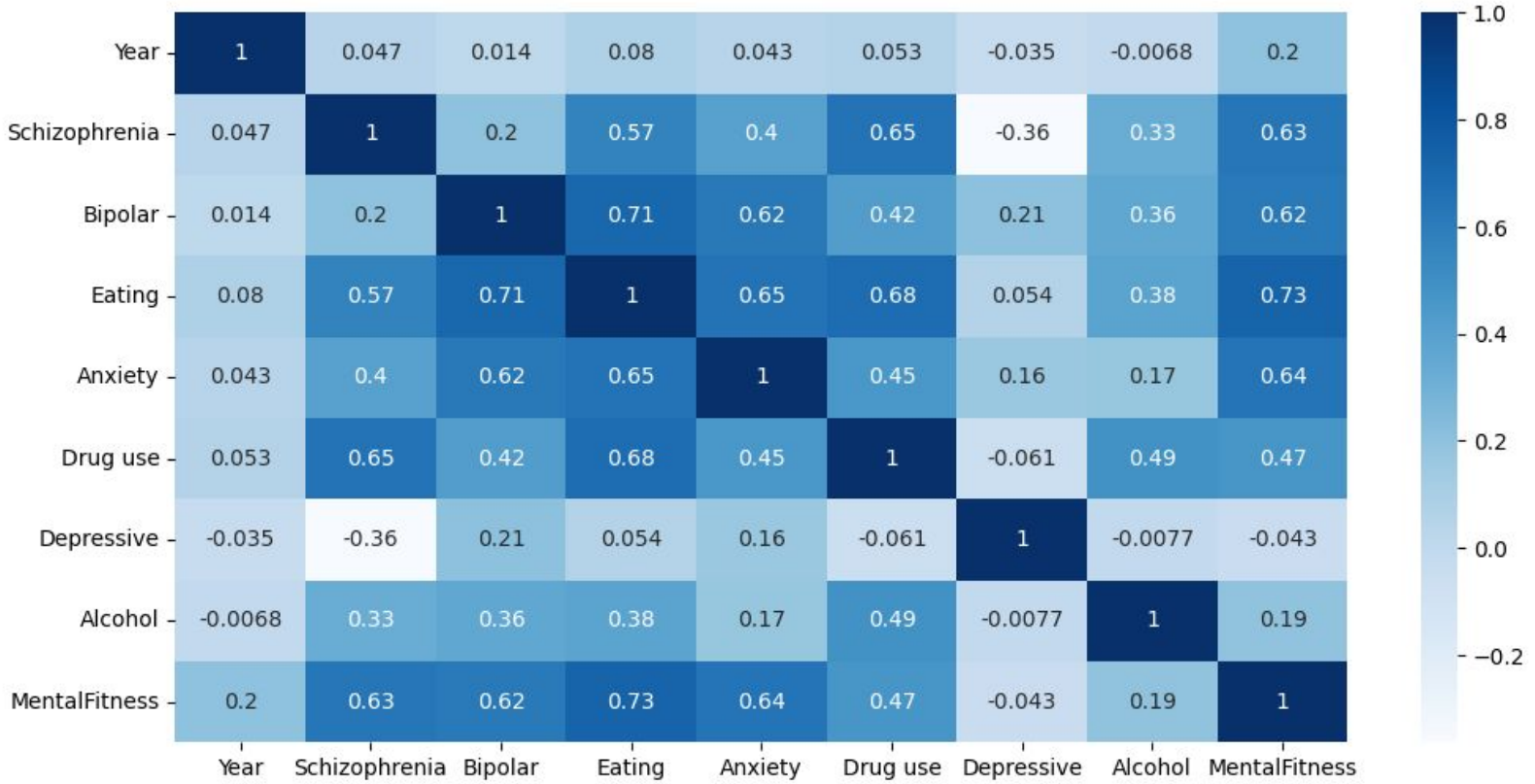
```
column_to_drop = "Code"
data1.drop(column_to_drop, axis=1, inplace=True)
```

[70] 0s
```
data1.info()
```

```
<class 'pandas.core.frame.DataFrame'>
Int64Index: 6840 entries, 0 to 6839
Data columns (total 10 columns):
 #   Column         Non-Null Count  Dtype
---  ------         --------------  -----
 0   Country        6840 non-null   object
 1   Year           6840 non-null   int64
 2   Schizophrenia  6840 non-null   float64
 3   Bipolar        6840 non-null   float64
 4   Eating         6840 non-null   float64
```

Heat Map

```
plt.figure(figsize=(12,6))
sns.heatmap(data1.corr(),annot=True,cmap='Blues')
plt.plot()
```



Data cleaning

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Data *Cleaning*

```
data1.isnull().sum()
```

```
                   0
Country            0
Year               0
Schizophrenia      0
Bipolar            0
Eating             0
Anxiety            0
Drug use           0
Depressive         0
Alcohol          690
MentalFitness      0
dtype: int64
```

```
data1.head()
```

```
[51] data1.size, data1.shape
```

```
(75240, (6840, 11))
```

```
[58] # colomn Set

data1.set_axis(['Country','Year', 'Schizophrenia','Bipolar','Eating','Anxiety','Drug use','Depressive','Alco
```

```
[97] data1.head()
```

	Country	Year	Schizophrenia	Bipolar	Eating	Anxiety	Drug use	Depressive	Alcohol	MentalFitness
0	0	1990	0.228979	0.721207	0.131001	4.835127	0.454202	5.125291	0.444036	1.696670
1	0	1991	0.228120	0.719952	0.126395	4.821765	0.447112	5.116306	0.444250	1.734281
2	0	1992	0.227328	0.718418	0.121832	4.801434	0.441190	5.106558	0.445501	1.791189
3	0	1993	0.226468	0.717452	0.117942	4.789363	0.435581	5.100328	0.445958	1.776779

✓ 0s completed at 04:35

Year wise mental fitness

colab.research.google.com/drive/1N4JUQNheZ_l4dEQQivxnjIK3u_UVhaiO#scrollTo=b4rlpKTIZMl1

MentalFitnessTracker.ipynb

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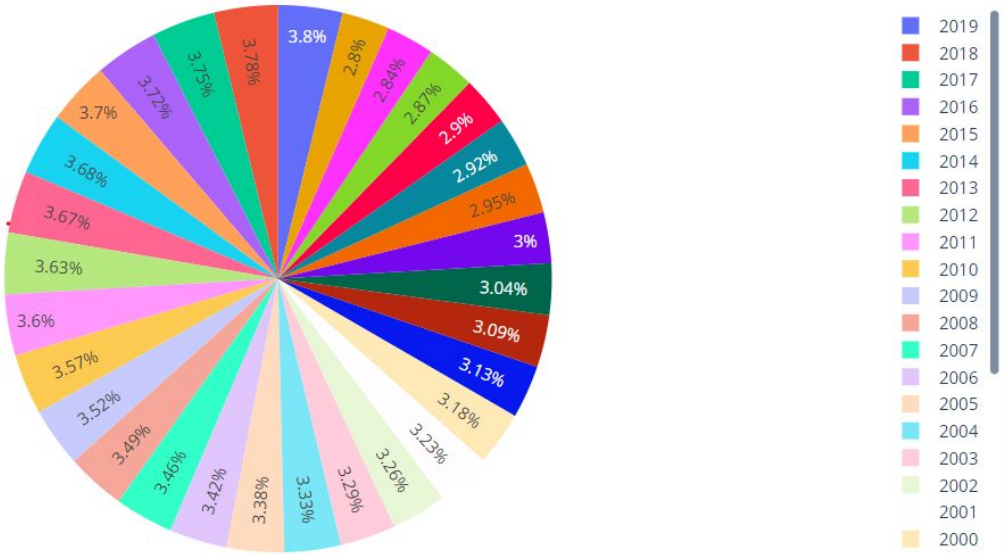
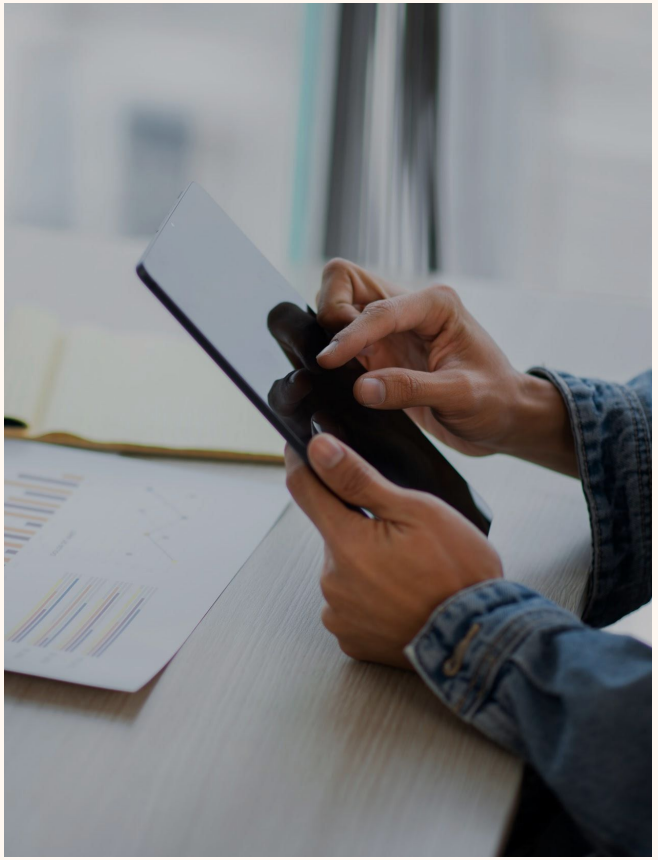
RAM Disk

```
fig = px.pie(data1,values='MentalFitness', names='Year')
fig.show()
```



6. Data Modeling



Linear Regressor

Mean square error =1.135

R^2 = 0.763

MentalFitnessTracker.ipynb

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```
[76] # Training an testing
     x = data1.drop('MentalFitness',axis=1)
     y = data1['MentalFitness']
```

```
[78] x_train, x_test, y_train, y_test = train_test_split(x, y, test_size=0.2, random_state=2)
```

```
print(" X train : ", x_train)
print(" X test : ", x_test)
print(" X tarain : ", y_train)
print(" X test : ", y_test)
```

Model training

Linear Regression

```
[80] # Step 5: Create and train the linear regression model
     regression_model = LinearRegression()
     regression_model.fit(x_train, y_train)
```

▸ LinearRegression

```
[83] # Step 6: Make predictions on the test set
     y_pred = regression_model.predict(x_test)
```

```
[84] # Step 7: Evaluate the model
     mse = mean_squared_error(y_test, y_pred)
     r2 = r2_score(y_test, y_pred)
```

```
[85] # Step 8: Print the evaluation metrics
     print("Mean Squared Error:", mse)
     print("R-squared:", r2)
```

```
Mean Squared Error: 1.1357545319272384
R-squared: 0.7638974087055272
```

Random Forest

Mean square error = 0.03

R^2 = 0.994

So best suited model is random forest regressor , Giving least mean square error

Random Forest

```
from sklearn.ensemble import RandomForestClassifier
from sklearn.metrics import accuracy_score, classification_report
```

```
[90] from sklearn.ensemble import RandomForestRegressor
     from sklearn.metrics import mean_squared_error, r2_score
```

```
[91] # Separate features (X) and target (y)
     X = data1.drop(columns=['MentalFitness'])  # Replace 'target_column_name' with the name of your target column
     y = data1['MentalFitness']
```

```
[92] # Split the data into 80% training and 20% testing sets
     X_train, X_test, y_train, y_test = train_test_split(X, y, test_size=0.2, random_state=42)
```

```
[93] # Initialize the Random Forest regressor
     rf_regressor = RandomForestRegressor(n_estimators=100, random_state=42)

     # Train the model on the training data
     rf_regressor.fit(X_train, y_train)
```

```
RandomForestRegressor
RandomForestRegressor(random_state=42)
```

```
[94] # Make predictions on the test set
     y_pred = rf_regressor.predict(X_test)

     # Calculate Mean Squared Error and R-squared score
     mse = mean_squared_error(y_test, y_pred)
     r2 = r2_score(y_test, y_pred)

     print("Mean Squared Error:", mse)
     print("R-squared score:", r2)
```

```
Mean Squared Error: 0.03028511515868332
R-squared score: 0.9940461716663964
```

Purpose / Result

1. Increased Self-Awareness and Better Emotional Regulation .
2. A healthier lifestyle .
3. Helps to lessen the stigma by offering a user-friendly and private platform .
4. Improved mental well-being can positively enhance productivity, focus, and overall performance in various areas of life .

Alternative resources

1. My git repository - "https://gist.github.com/SONA0007/a62983457c09fa1074776b1fbf9aed4c.js"

2. https://michael-scherding.medium.com/building-a-simple-mental-health-tracker-with-streamlit-sqlite-plotly-chatgpt-and-wrapped-in-2a20ad40dbe

3. https://www.irjmets.com/uploadedfiles/paper/issue_4_april_2022/20946/final/fin_irjmets1650484385.pdf

Thank you for this opportunity!