Model Development Phase Template

Date	11 July 2024
Team ID	SWTID1720075414
Project Title	Panic Disorder Detection
Maximum Marks	5 Marks

Feature Selection Report Template

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

Feature	**Description**	**Selected (Yes/No)**	**Reasoning**
Participant ID	Unique identifier assigned to each participant	No	For predicting Panic Disorder, Participant ID is not required
Age	Person's Age	Yes	Relevant for assessing the diversity and potential bias among different age groups
Gender	Person's Gender	Yes	Relevant for assessing the diversity and potential bias among different genders
Family History	Indicates the presence of a family history of panic disorder	Yes	Panic Disorders can be increased due to the influence of genetic predisposition and shared environmental

Personal History	Indicates personal medical history related to panic disorder	Yes	Previous experiences, traumas, or major life events can predispose individuals to panic disorders.
Current Stressors	Level of current stress	Yes	Presently affecting stress factors can increase the chances of Panic Disorder among individuals
Symptoms	Types of symptoms experienced (e.g., shortness of breath, panic attacks, chest pain, dizziness, fear of losing control).	Yes	Specific symptoms can directly indicate the presence of Panic Disorder
Severity	Severity of symptoms	Yes	The intensity or frequency of symptoms can indicate the severity of the disorder, which affects prediction.
Impact on Life	The impact of symptoms on day-to-day life	Yes	How much the disorder interferes with daily life can indicate help in predicting it's outcomes.
Demographics	Urban or rural classification	Yes	Demographic factors, such as education, socioeconomic status, can directly influence the chances of having a Panic Disorder
Medical History	Existing medical conditions (e.g., diabetes, asthma, heart disease, or none).	Yes	Recurring or simultaneously occurring medical conditions may increase, decrease or interact with panic disorder symptoms.
Psychiatric History	Existing psychiatric conditions (e.g., bipolar disorder)	Yes	Previous diagnoses can affect the likelihood and severity of panic disorder.

Substance Use	Use of substances such as alcohol, drugs, or none.	Yes	Certain substances like drugs and alcohol can trigger or worsen panic attacks, influencing disorder prediction.
Coping Mechanisms	Methods used to cope (e.g., seeking therapy)	Yes	How individuals manage stress can impact the development and severity of panic disorder.
Social Support	Indicates the Level of social support	Yes	Strong social networks can act as a defence against stress and reduce the likelihood of developing panic disorder.
Lifestyle Factors	Lifestyle factors such as exercise, diet, sleep quality.	Yes	Diet, exercise, sleep patterns, and other lifestyle choices can impact mental health and the occurrence of panic disorder.

Feature Selection

```python
#Calculating Fscore and p value
f_p_values=chi2(x_res_train,y_res_train)
f_p_values
# Here first array has F values and second array has P values.
```

```
(array([ 111.54713116, 2860.55429536,   106.29808933,   358.44994186,
        36966.58588069,   326.95882218, 3217.70966841, 4893.11173519,
         6430.72664658, 7426.1455175 , 5249.37170229, 4894.98561757,
          296.48414184, 1709.07853466, 35569.11363017]),
 array([4.49003108e-26, 0.00000000e+00, 6.34376073e-25, 6.12500793e-80,
        0.00000000e+00, 4.41742427e-73, 0.00000000e+00, 0.00000000e+00,
        0.00000000e+00, 0.00000000e+00, 0.00000000e+00, 0.00000000e+00,
        1.92208804e-66, 0.00000000e+00, 0.00000000e+00]))
```

```python
#p Values
p_values=pd.Series(f_p_values[1])
p_values.index= x_train.columns
p_values.sort_index(ascending=True)
# We sort the P values array based on the Chi scores and select moderately important and least important feature/s.
```

```
Age                   4.490031e-26
Coping Mechanisms     1.922088e-66
Current Stressors     0.000000e+00
Demographics          0.000000e+00
Family History        6.343761e-25
Gender                0.000000e+00
Impact on Life        0.000000e+00
Lifestyle Factors     0.000000e+00
Medical History       0.000000e+00
Personal History      6.125008e-80
Psychiatric History   0.000000e+00
Severity              0.000000e+00
Social Support        0.000000e+00
Substance Use         0.000000e+00
Symptoms              4.417424e-73
dtype: float64
```