**Brainstorming Ideas and Voting**

Date: 18-10-2023

Team ID: Team-593053

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| Project Name: Predicting Mental Health Illness Of Working Professionals Using Machine Learning |
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Maximum Marks: 4

Brainstorming ideas is a creative process where a group generates a list of potential solutions, suggestions, or concepts for a specific problem or project. Voting in brainstorming involves participants selecting and prioritizing their favourite or most promising ideas from the list to determine which ones should be pursued further.

**Brainstorming Ideas for Predicting Mental Health Illness of Working Professionals Using Machine Learning**:

1)Feature Engineering and Selection: Explore the dataset thoroughly and identify relevant features such as work hours, stress levels, job roles, job satisfaction scores, and any self-reported mental health indicators. Engage in feature engineering to create new meaningful features that might enhance the predictive power of the model. Use techniques like correlation analysis to select the most impactful features for the prediction task.

2)Sentiment Analysis on Open-Ended Responses: If your dataset includes open-ended responses from surveys or questionnaires, perform sentiment analysis on these responses. Extract sentiments and emotions expressed by professionals about their work environment, workload, and colleagues. Incorporate this sentiment analysis as a feature in your machine learning model.

3)Temporal Analysis: Analyze the dataset over time to identify trends or patterns related to mental health. This could involve looking at how mental health indicators change over months or years, considering external factors such as work deadlines or major company events. Time-based patterns might provide valuable insights for prediction.

4)Anomaly Detection: Implement anomaly detection techniques to identify unusual patterns or behaviors in the dataset. Unusual patterns might indicate periods of extreme stress or dissatisfaction, which could be early indicators of mental health issues. Anomaly detection models such as Isolation Forest or One-Class SVM can be valuable for this purpose.

5)Ensemble Learning: Experiment with ensemble learning techniques like Random Forest, Gradient Boosting, or Stacking. Ensemble models often outperform individual models by combining predictions from multiple base models. Try different combinations of base models and ensemble methods to find the best-performing ensemble for your specific prediction task.

6)Deep Learning Approaches: Consider using deep learning models such as recurrent neural networks (RNNs) or long short-term memory networks (LSTMs) if your dataset contains sequential or time-series data. These models can capture complex temporal dependencies and might improve prediction accuracy, especially if the dataset spans a considerable timeframe.

**Idea Submission:**

Based on the provided dataset, we propose the following idea:

Idea: Temporal Analysis and Anomaly Detection

We suggest conducting a detailed temporal analysis of the dataset to identify patterns related to mental health indicators over time. Simultaneously, implement anomaly detection techniques to pinpoint unusual or extreme behaviours or sentiments expressed by working professionals. By combining these analyses, we can build a predictive model that not only captures temporal trends but also detects early signs of mental health issues through anomalies. This approach offers a holistic view of the dataset, enabling us to create a robust and accurate machine learning model for predicting mental health illness among working professionals.