An AI Psychiatrist

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1. Abstract:

The proposed AI Psychiatrist aims to revolutionize mental health care by leveraging artificial intelligence and machine learning technologies. This document outlines the design and development of an innovative virtual mental health assistant that provides personalized support and guidance to individuals. The AI Psychiatrist lets people talk about their ideas, feelings, and worries using powerful natural language understanding techniques. The system uses machine learning algorithms to find trends, diagnose mental health disorders, and offer self-care or professional assistance based on input data.

The key objectives of this project are to develop a robust backend infrastructure capable of handling user interactions, integrate state-of-the-art machine learning algorithms for accurate analysis, and create an intuitive user interface for seamless user engagement.

The potential impact of the AI Psychiatrist is substantial. It has the potential to significantly improve access to mental health support by providing round-the-clock assistance, particularly in underserved areas or during times of crisis. The prototype also aims to reduce the stigma of seeking mental health help by offering an anonymous and non-judgmental platform for individuals to express themselves.

2. Problem Statement:

Mental health issues have a wide-reaching effect. The current state of mental health care faces various challenges that hinder access to timely and practical support. This problem statement addresses mental health care issues and introduces an AI Psychiatrist prototype as a solution. Statistics from reputable sources reveal the magnitude of the mental health crisis.

According to the World Health Organization (WHO), 1 in 4 people worldwide will experience a mental health disorder at some point. Mental health disorders accounted for 7.4% of all global DALYs in 2019. Despite the prevalence of mental health issues, numerous barriers impede access to adequate care. Long waiting times for appointments with mental health professionals often lead to delayed interventions and worsening conditions. The shortage of mental health practitioners in underserved areas compounds the problem. Furthermore, the societal stigma

surrounding mental health makes individuals hesitate to seek help, perpetuating the treatment gap.

To address these challenges, we propose the development of an AI Psychiatrist. The AI Psychiatrist will use AI and ML(NLP, Pattern Recognition, Personalized Recommendations, and Data Analysis) to offer personalized mental health support. By analyzing user input and applying advanced algorithms, the AI Psychiatrist can detect patterns, identify potential mental health issues, and deliver tailored recommendations for self-care or professional intervention.

3. Market/Customer/Business Need Assessment:

Market Analysis:

- The mental health care market is multiplying, with an increasing demand for accessible and personalized support. According to the World Health Organization (WHO), mental health conditions affect around 450 million people globally.
- Growing awareness of mental health, rising stress levels, and the pandemic's effect on mental wellness drive the market.
- Existing solutions, like therapy and telehealth, have wait times, availability, and cost issues.
- There is a growing trend towards technology-driven mental health solutions, including AI and machine learning applications, to address these limitations and improve accessibility.

Customer Analysis:

- The target audience for the AI Psychiatrist prototype includes individuals seeking mental health support, ranging from young adults to middle-aged individuals, who face various mental health challenges.
- According to the National Institute of Mental Health, approximately 20% of adults in the United States experience a mental illness yearly.
- Surveys indicate that many people hesitate to seek help due to the stigma associated with mental health.
- There is a demand for convenient, confidential, and accessible mental health support that can be accessed anytime and anywhere.

Business Needs:

- The organization developing the AI Psychiatrist prototype aims to provide a scalable and innovative solution to address the gaps in mental health care.
- The prototype aligns with the organization's mission to improve mental well-being, reduce stigma, and enhance accessibility to mental health support.
- The business seeks to differentiate itself by leveraging AI and machine learning technologies to offer personalized recommendations and support to needy individuals.

- There is a need to establish strategic partnerships with mental health professionals, healthcare providers, and technology experts to ensure the successful implementation and adoption of the prototype.

Value Proposition:

- The AI Psychiatrist prototype offers a unique value proposition by providing 24/7 accessible, personalized, and confidential mental health support.
- By leveraging AI and machine learning algorithms, the prototype can analyze user input, detect patterns, and provide tailored self-care or professional intervention recommendations.
- The prototype aims to reduce the stigma of seeking help by providing an anonymous and non-judgmental virtual environment for individuals to express themselves.
- The potential benefits for customers include improved accessibility, reduced waiting times, and the ability to receive immediate support during times of crisis.

Risk Assessment:

- Potential risks include legal and ethical considerations related to data privacy, security, and confidentiality.
- Technical risks include algorithmic biases and limitations in accurately identifying complex mental health conditions.
- The prototype may face resistance from traditional mental health care providers who perceive it as a substitute rather than a complementary solution.
- Mitigation strategies include ensuring compliance with data protection regulations, conducting rigorous testing and validation of algorithms, and collaborating with mental health professionals to establish credibility and trust.

4. Target Specifications and Characterization:

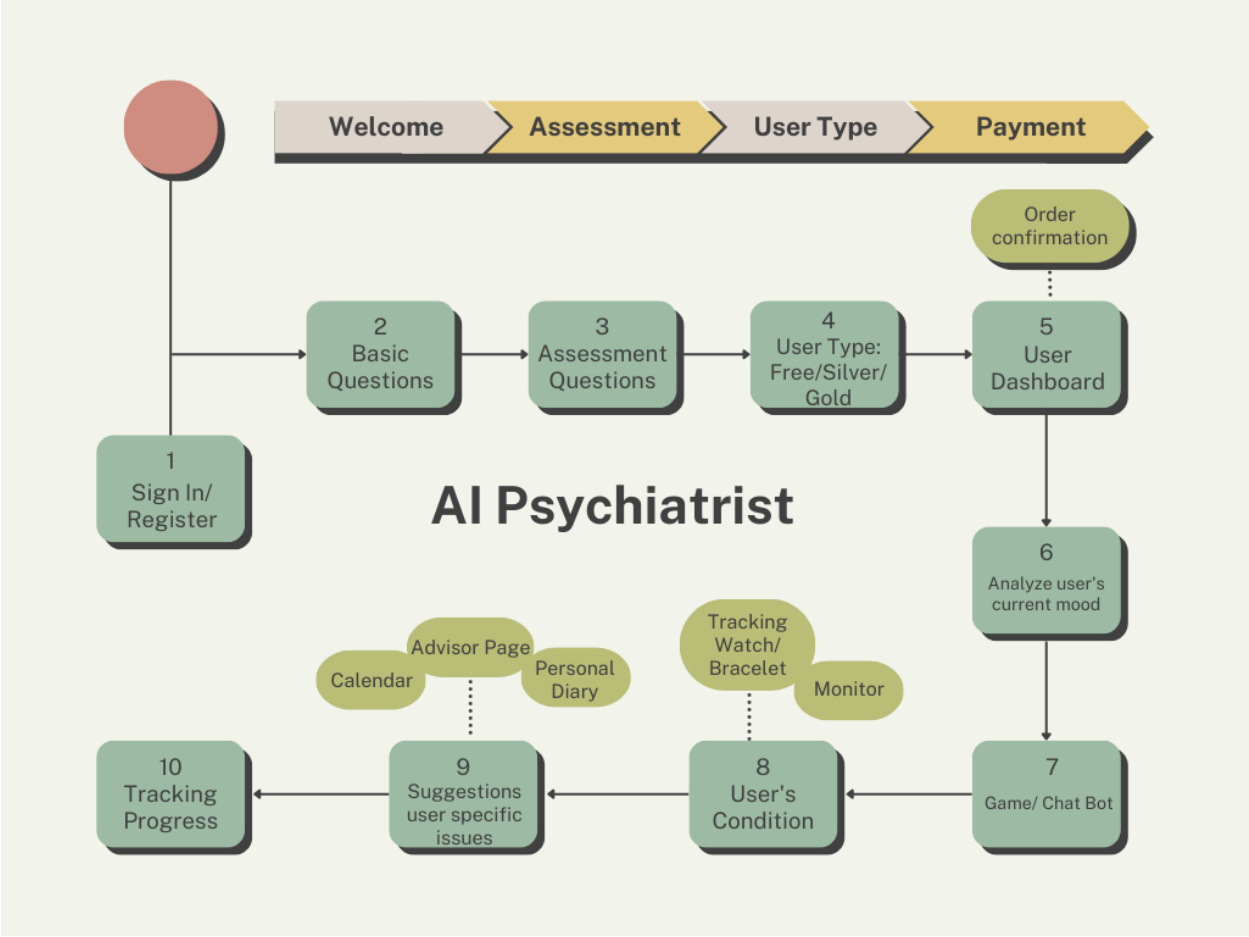
Our AI Psychiatrist will be a targeted mental health service for a particular consumer category. It may serve individual mental health clients or small groups. The AI Psychiatrist might provide mood monitoring, personalized treatments, self-help materials, and virtual therapy sessions as a mobile app, web platform, or subscription service. Mental health entrepreneurs or solo practitioners might create and sell this product. We can create a large-scale solution, but our main targets are small firms.

- User-Friendly and Confidential Platform
- Natural Language Processing (NLP) Capabilities:
  - ❖ The AI Psychiatrist will utilize advanced NLP techniques to understand and interpret user input in natural language.
  - ❖ It will be capable of analyzing sentiment, extracting critical information, and understanding the context of user conversations.

- ❖ The NLP capabilities will enable the AI Psychiatrist to engage in meaningful and empathetic conversations with users.

- Symptom Assessment and Mental Health Screening
- Resource Recommendations and Referrals
- Real-Time Support and Chatbot Functionality- The chatbot functionality will provide empathetic responses, active listening, and guidance in addressing mental health concerns.
- Data Analytics and Insights- The AI Psychiatrist prototype will collect anonymized and aggregated data to generate insights on employee mental health trends. These insights can help small-scale businesses identify common challenges and develop targeted interventions and support strategies.

Basic Function



5. External Searches (Information searches):

Mental illness can affect cognition, emotion, and behavior among people. Children's ability to learn could be interfered with by mental disorders. Besides that, mental illness can cause inconvenience to adults, especially in their families, workplaces, and society. There are many types of mental disorders commonly known as schizophrenia, depression, bipolar disorder, and anxiety.

Depression is characterized by profound sorrow. Anger, irritability, and lack of interest may dominate depressive symptoms. Sleep, hunger, and energy issues are widespread throughout cultures. Patients may have delayed thinking, suicidal thoughts, and guilt. Mania and depression are symptoms of bipolar illness. Mania depression episodes may occur. Mania causes irritation, energy, and sleeplessness. Maniacs act recklessly.

Anxiety disorder is another frequent mental illness. Panic disorders are sudden panic episodes and acute terror. Panic disorder causes rapid heart, sweating, and dizziness. Excessive worrying describes GAD(General Anxiety Disorder). PTSD causes emotional numbness. Social anxiety sufferers fear social settings.

Data management and processing are becoming prominent computer science topics. Data mining uncovers significant patterns and correlations in massive datasets. In medicine, Supervised and unsupervised data mining methods exist. Unsupervised learning identifies item similarity and finds patterns in group data: grouping, connection, summarising, and sequence finding. Unsupervised learning may automatically detect the data structure from unlabeled input data. It helps many academics extract important data, deliver personalized advice, and create automated intelligent systems.

Ensemble learning deliberately generates classifiers to solve a problem. Ensemble learning improves model performance or reduces the likelihood of picking inferior models. Due to its capacity to address numerous machine learning tasks, such as image recognition, audio recognition, and natural language processing, neural networks, and deep learning have grown increasingly popular. These algorithms learn from observational data using the brain's neural networks.

- **Machine Learning Approaches in Predicting Schizophrenia:**

Jo et al. identified 48 schizophrenia patients and 24 healthy controls using network analysis and machine learning. Probabilistic brain tractography reconstructed the network. Next, machine learning labels schizophrenia patients and healthy controls. The random forest model has 68.6% accuracy, followed by the multinomial naive Bayes at 66.9%. Then, XGBoost has 66.3%

accuracy, and the support vector machine has 58.2%. Most machine learning systems accurately predict schizophrenia patients and controls.

Pinaya et al. interpreted neuro morphometry data from 83 healthy controls and 143 schizophrenia patients using the deep belief network. The model has 73.6% accuracy, whereas the SVM has 68.1%. The model can distinguish cerebrum component classes. Pinaya et al. suggested a feasible method for studying brain-based illnesses without patients in 2018—deep autoencoder-generated neuroanatomical deviation values and patterns.

- **Machine Learning Approaches in Predicting Depression and Anxiety**

Ahmed et al. offer a model to detect anxiety and depression early. Psychological testing and machine learning methods, including convolutional neural network, support vector machine, linear discriminant analysis, and K-nearest neighbor, identify anxiety and depression intensity in two data sets. The convolutional neural network has the greatest accuracy of 96% for anxiety and 96.8% for depression. The SVM has 95% accuracy for anxiety and 95.8% for depression. Additionally, linear discriminant analysis was 93% accurate for anxiety and 87.9% for depression. The K-nearest neighbor model had the lowest accuracy, 70.96% for anxiety and 81.82% for depression. Thus, the convolutional neural network may help psychologists and counselors optimize therapy.

- **Machine Learning Approaches in Predicting Bipolar Disorder**

Valenza et al. suggested a PSYCHE system that functions as a wearable device, and the data gathered will be further analyzed for predicting mood changes in bipolar disorder. The data set consisted of electrocardiogram signals recorded from the patients, and heart rate features from the signals will be selected as the prediction outcome. After applying the support vector machine, an average accuracy of 69% is obtained in predicting the mood states of bipolar disorder.

- **Machine Learning Approaches in Predicting Post-traumatic Stress Disorder (PTSD)**

Reece et al. forecast PTSD and sadness on Twitter users using random Forest. The authors examined over 243,000 PTSD-related Twitter tweets. PTSD and healthy control data were used to predict. Random forest predicts PTSD with an AUC of 0.89.

Using functional magnetic resonance imaging and diffusion tensor data, Rangaprakash et al. used support vector machines to identify PTSD-related regions. News and features were obtained from 87 male troops. The support vector machine classified hippocampal-striatal hyperconnectivity and PTSD with 83.59% accuracy.

6. Benchmarking (alternate products):

During the benchmarking process, the key aspects to consider include:

- User experience and interface design
- Features and Functionality
- Content quality and variety
- Monetization models
- User feedback and reviews

1. Woebot:

Woebot is an AI-powered mental health chatbot. Cognitive-behavioral therapy and natural language processing engage people in dialogues. Benchmarking Woebot helps analyze its conversational flow, user experience, and intervention techniques.

2. Talkspace:

Talkspace offers text, voice, and video therapy sessions with licensed therapists. It provides customized treatment regimens and safe support channels.
Benchmarking Talkspace may reveal its user onboarding, therapeutic models, and privacy features.

3. Calm:

Calm offers guided meditations, sleep tales, and relaxation practices. Audio material reduces stress and promotes awareness. Benchmarking Calm may reveal its content, user engagement, and monetization tactics.

4. Headspace:

Headspace, another popular meditation software, provides guided meditation and mindfulness activities. It has themed meditation kits and programs for stress reduction and sleep.
Benchmarking Headspace may reveal its user interface, content delivery, and subscription strategy.

Improvements in Product:

1. ***Advanced Emotional Analysis:*** AI Psychiatrists will employ advanced sentiment analysis and emotion identification to understand the user's emotions. The AI Psychiatrist can better comprehend and react to user emotions by analyzing text, speech, and facial expressions.
2. ***Tailored Therapy Programs:*** The AI Psychiatrist will personalize treatment to the user's requirements, preferences, and progress. Over time, machine learning algorithms will optimize the treatment program for each individual.
3. ***Interactive Exercises and Tools:*** Interactive training sessions and tools will engage consumers and encourage mental health in our product. Examples include mindfulness, relaxation, cognitive-behavioral therapy, mood-tracking, and writing prompts. The AI Psychiatrist provides real-time feedback and encouragement throughout these exercises.

4. ***Gamification Elements:*** Gamification will motivate users to our product. Users may earn badges and unlock awards as they finish therapeutic programs, exercises, or milestones. Gamification may motivate users, boost self-esteem, and make therapy more fun.
5. ***Integration with Wearable Devices:*** This product will work with smartwatches and fitness trackers. This integration will better gather physiological data like pulse rate and sleep habits to understand the user's mental and emotional health. This data lets the AI Psychiatrist provide personalized suggestions and interventions.
6. ***Virtual Support Groups:*** Our software lets Users join virtual support groups for mental health issues. Users may share experiences, provide assistance, and converse with the AI Psychiatrist in these support groups. Virtual support groups may improve social support, minimize loneliness, and boost belonging.
7. ***Continuous Learning and Improvement:*** AI Psychiatrists will learn continuously. Analyzing aggregated and anonymized user data will help the system evaluate treatments, therapeutic methods, and program structures. This data-driven approach will improve the AI Psychiatrist's suggestions and interventions.

7. Applicable Constraints (need for space, budget, expertise):

- Cloud Infrastructure: Evaluate the potential for leveraging cloud-based infrastructure to minimize physical space requirements. Explore the feasibility of utilizing cloud platforms for data storage, computational resources, and AI Psychiatrist application hosting.
- Budget Limitations:
  A) Cost of Development: Analyze the estimated costs of developing the AI Psychiatrist product. Consider expenses related to software development, hardware procurement, licensing fees, infrastructure setup, and other relevant factors.
  B) Ongoing Maintenance and Upgrades: Factor in the anticipated costs for continuous maintenance, updates, and upgrades to ensure the product's optimal performance and security. Include potential expenses for bug fixes, system enhancements, and addressing compatibility issues.
  C) Cost Optimization Strategies: Identify opportunities to optimize costs without compromising the product's quality and functionality. Explore open-source software alternatives, evaluate different hardware options, and consider resource-sharing to reduce expenses.
- Expertise Considerations:
  A) Technical Expertise: Assess the need for specialized skills and knowledge in artificial intelligence, machine learning, software development, and data management. Determine whether in-house expertise or external partnerships/consultants will be required.
  B) Recruitment and Training: Evaluate the resources needed to acquire and train a team with the necessary expertise. Consider the cost and time required for talent acquisition, onboarding, and ongoing professional development.

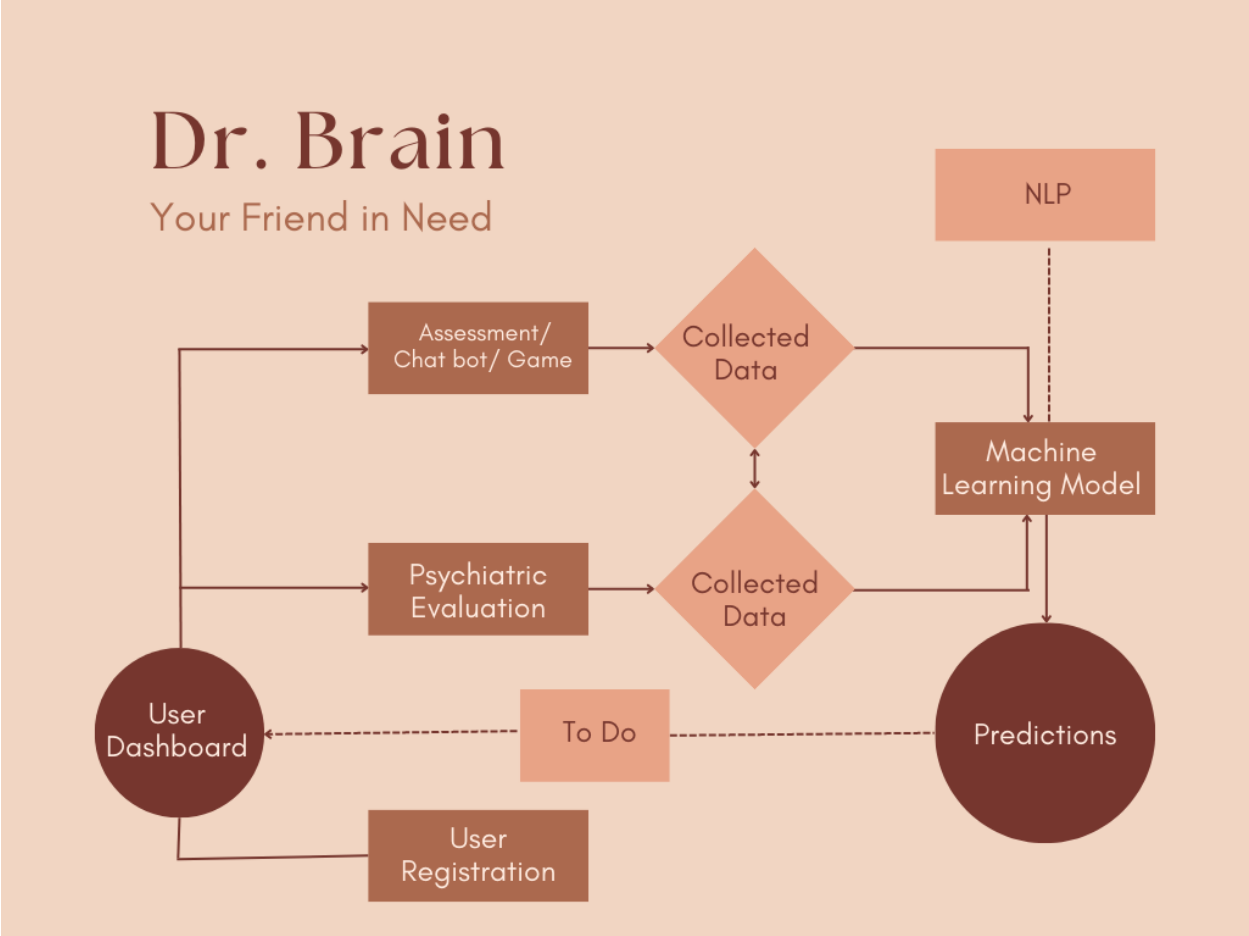
C) Collaboration and Partnerships: Explore the potential for collaborations with academic institutions, research organizations, or industry experts to leverage their expertise and access specialized knowledge.

8. Business Model (Monetization Idea):

- **Cost Estimation:** Development Costs, Infrastructure Costs, Content Creation Costs, Marketing and Promotion Costs, Operational Costs
- **Revenue and Profit:**
  - **Subscription Revenue:** Market research, competition analysis, and consumer willingness to pay to determine premium subscription price. Estimate first-year members and monthly subscription income. For instance, 500 members at $15 per month would generate $7,500 in monthly subscription income.
  - **In-App Purchases:** Find content, treatment modules, and premium features to sell in-app. User involvement and market research can estimate conversion rate and revenue.
  - **Partnerships and Referral Programmes:** Partner with mental health practitioners, wellness brands, or other related companies. Referral or revenue-sharing programs may boost income.
  - **Data Insights and Analytics:** Consider licensing anonymized and aggregated user data to pharmaceutical or research institutes. Data-based pricing strategies and collaborations produce money.
  - **Enterprise Solutions:** Customize mental health assistance solutions for businesses—price by staff count or subscription.
- **Growth Potential:**

  - **User Acquisition/Retention:** Target marketing to gain and retain users. To increase users, focus on user experience, social media, and mental health influencers or organizations.
  - **Market Expansion:** Find new markets and sectors. Increase market share by expanding geographically or targeting specialized markets.
  - **Product improvements:** User input and market trends should drive AI Psychiatrist prototype improvements. Update and add features often to attract and keep users.
  - **Strategic Partnerships:** Partner with mental health experts, institutions, or industry leaders to extend their reach and network.

9. Final Product Prototype:



The schematic diagram illustrates the components and their interactions within the AI/ML Psychiatrist system:

1. User Interface:
    - Provides a user-friendly interface for interacting with the AI/ML Psychiatrist.
    - Can be a mobile application, web platform, or voice-controlled assistant.
2. Natural Language Processing (NLP):
    - Utilizes NLP techniques to process and understand user inputs, including text and speech.
    - Extracts key information, sentiments, and emotions from user interactions.
3. Machine Learning Models:
    - Employs machine learning algorithms trained on vast datasets of mental health information.

- Models include sentiment analysis, emotion detection, mental health assessment, and personalized recommendation systems.

4. Data Integration:
    - Integrates with various data sources, such as medical records, symptom databases, and research findings.
    - Enables the AI/ML Psychiatrist to access up-to-date information and make informed decisions.
5. Cognitive Behavioral Therapy (CBT) Techniques:
    - Incorporates evidence-based CBT techniques into the AI/ML Psychiatrist's functionalities.
    - Offers interactive exercises, coping strategies, and personalized interventions for mental health improvement.
6. Privacy and Security:
    - Implements robust privacy measures to ensure the confidentiality of user data.
    - Adheres to regulatory standards and best practices for data protection.

The schematic diagram illustrates the flow of information and interactions within the AI/ML Psychiatrist system, emphasizing the integration of user inputs, NLP processing, machine learning models, and personalized recommendations. It highlights the technology-driven approach to providing mental health support and the potential for scalability and accessibility.

10. Product Details:

➢ **How does it work?**

The AI Psychiatrist utilizes advanced artificial intelligence and machine learning techniques to provide personalized mental health support. Here's how it works:

a. User Interaction: Users interact with the AI Psychiatrist through a user-friendly interface, engaging in confidential conversations and providing input about their mental well-being.

- User Registration
- Subscription Plans
- Chatbots and Fun Brain Games to analyze user's mental state
- Personal Locked Journal
- Virtual Support Group
- User-specific weekly assessments from a set of questions to analyze the user’s mental state
- Exercises and techniques to improve health
- Wearable tracking devices

- Personalized Treatment Plans
- Real-Time Counselling Sessions

b. Natural Language Processing (NLP): NLP algorithms process user input, understanding and interpreting the text to extract relevant information, sentiments, and emotions.
c. Data Analysis and Personalization: The AI Psychiatrist analyzes user data, including conversations, mood tracking, behavioral patterns, and historical information, to generate personalized recommendations and interventions.
d. Recommendation Engine: Machine learning algorithms and cognitive models are employed to generate evidence-based recommendations for self-care, stress management, coping strategies, and professional intervention when necessary.
e. Resource Library: The AI Psychiatrist provides access to a comprehensive resource library, offering educational materials, articles, and self-help tools related to mental health.

➢ **Data Sources:** The AI Psychiatrist relies on diverse data sources to enhance their understanding and provide personalized recommendations. These data sources may include:

- User input and conversations
- Mood tracking and emotional data
- Clinical Research and evidence-based literature
- Behavioral Patterns and historical information
- User feedback and user-generated content

➢ To develop the AI Psychiatrist, the following technologies, algorithms, frameworks, and software may be utilized:

- **Natural Language Processing (NLP)**: NLP algorithms and libraries like NLTK or spaCy
- **Sentiment Analysis**: Sentiment analysis models and techniques
- **Machine Learning**: Supervised and unsupervised learning algorithms for data analysis and personalized recommendations
- **Deep Learning**: Deep learning frameworks like TensorFlow or PyTorch for advanced analysis and recommendation models
- **Cloud Services**: Infrastructure and storage services like AWS or Google Cloud
- **Database:** A database management system like PostgreSQL or MongoDB for data storage and retrieval
- **Web Development:** Front-end and back-end frameworks like ReactJS, Node.js, and Express for developing the user interface and server-side components

➢ **Team Required**

- **Development Team:** Full Stack Developer- 1, Machine Learning Engineer- 1, Database Specialists- 1
- **Design and User Experience:** UI/UX Designer- 1
- **Additional Team Members:** Project Manager- 1, Quality Assurance Specialist- 1

➢ **Cost Estimation**

Note: We can cut costs as per requirement and make it less.

Revenue Streams	**Percentage**	**Estimated Amount (INR)**
Subscription Model	60%	₹18,12,000
In-App Purchases	20%	₹6,04,000
Licensing	10%	₹3,02,000
Data Analytics	10%	₹3,02,000
Total Revenue	100%	₹30,20,000
Costs	**Percentage**	**Estimated Amount (INR)**
Development and Maintenance	40%	₹12,08,000
Infrastructure and Hosting	15%	₹4,53,000
Marketing and Promotion	20%	₹6,04,000
Customer Support	10%	₹3,02,000
Total Costs	100%	₹30,20,000
Profit	**Percentage**	**Estimated Amount (INR)**
Gross Profit Margin	50%	₹15,10,000

11. Code Implementation/Validation:

Predictors of mental health illness:
Can you predict whether a patient should be treated for their mental illness or not according to the values obtained in the dataset?

Evaluating Models:

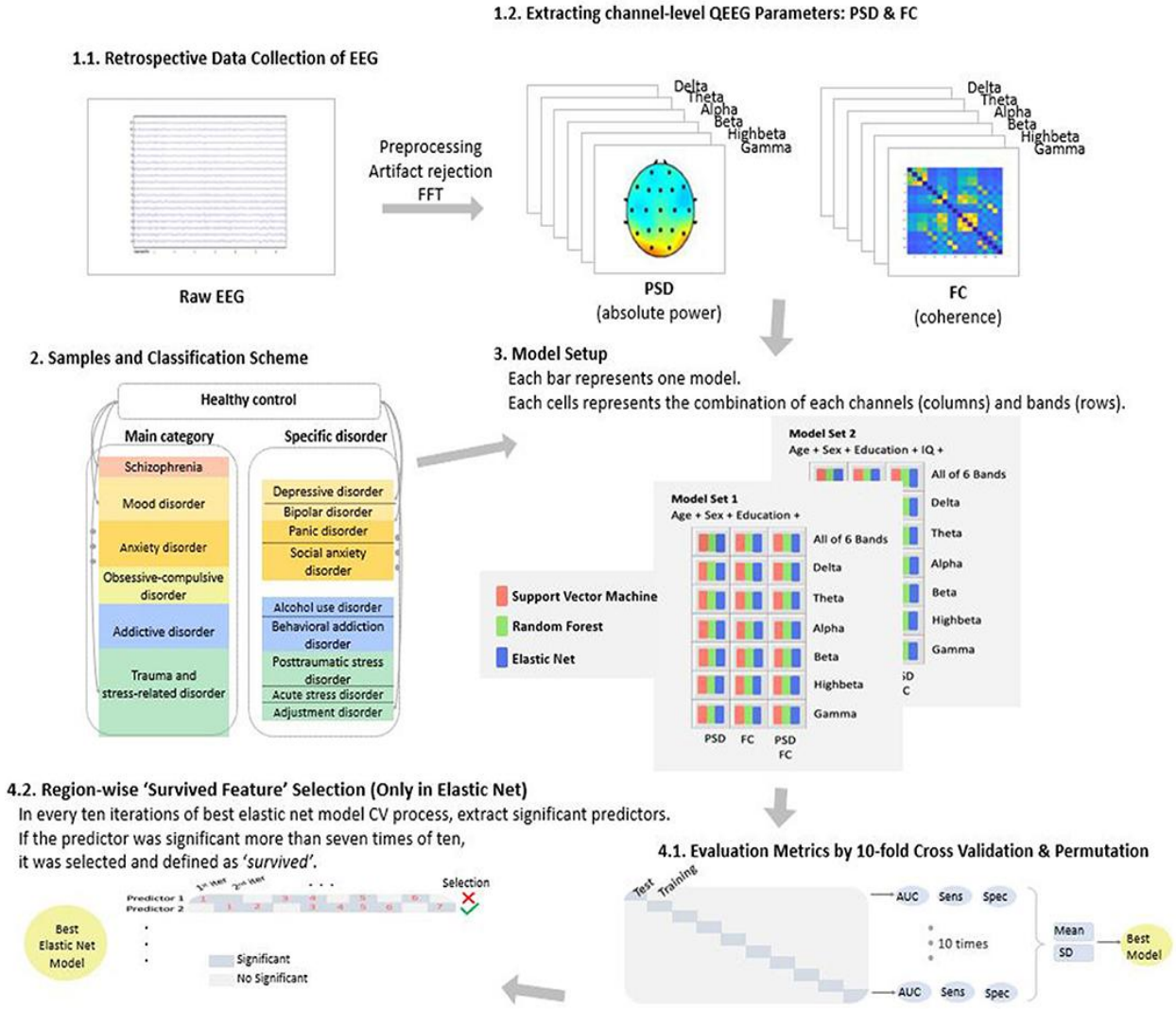
- Logistic Regression
- KNeighbors Classifier
- Decision Tree Classifier
- Random Forests
- Bagging
- Boosting
- Stacking

We will use Data sets collected retrospectively from medical records, psychological assessment batteries, and quantitative EEG (QEEG) at resting-state assessments—testing accuracy scores, training models, and testing them to predict the data as accurately as possible.

Simple Prediction Method:

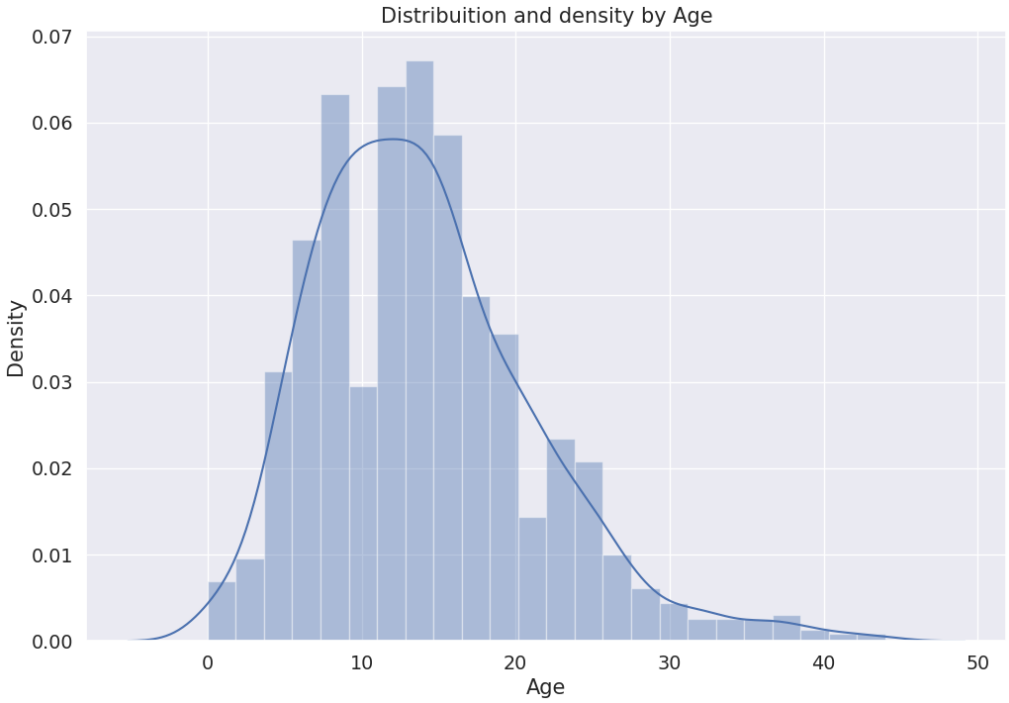
[Input] → [Machine Learning Algorithm] → [Treatment Prediction]

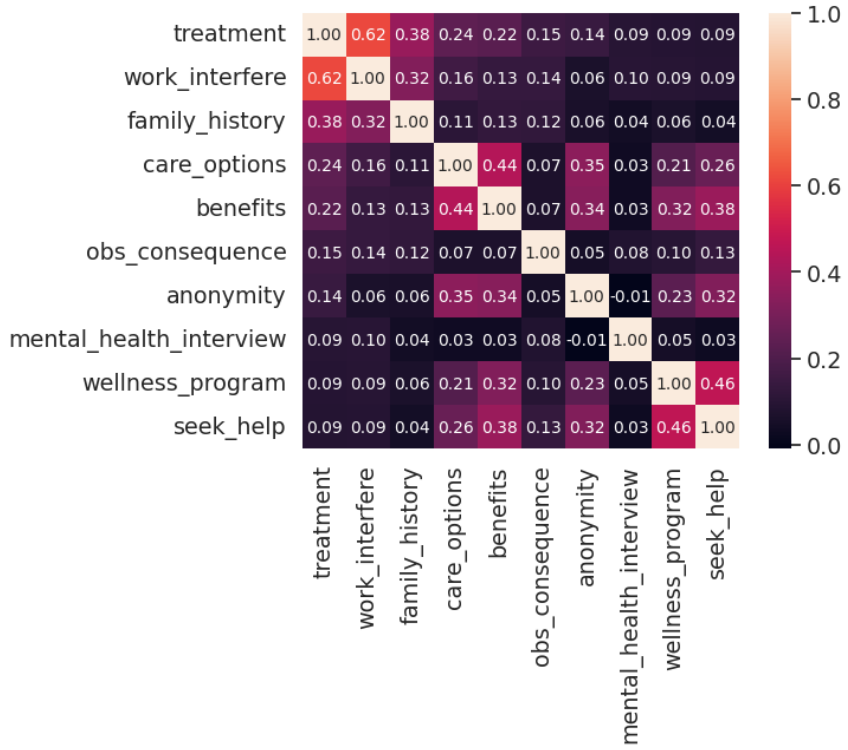
Method of Prediction:



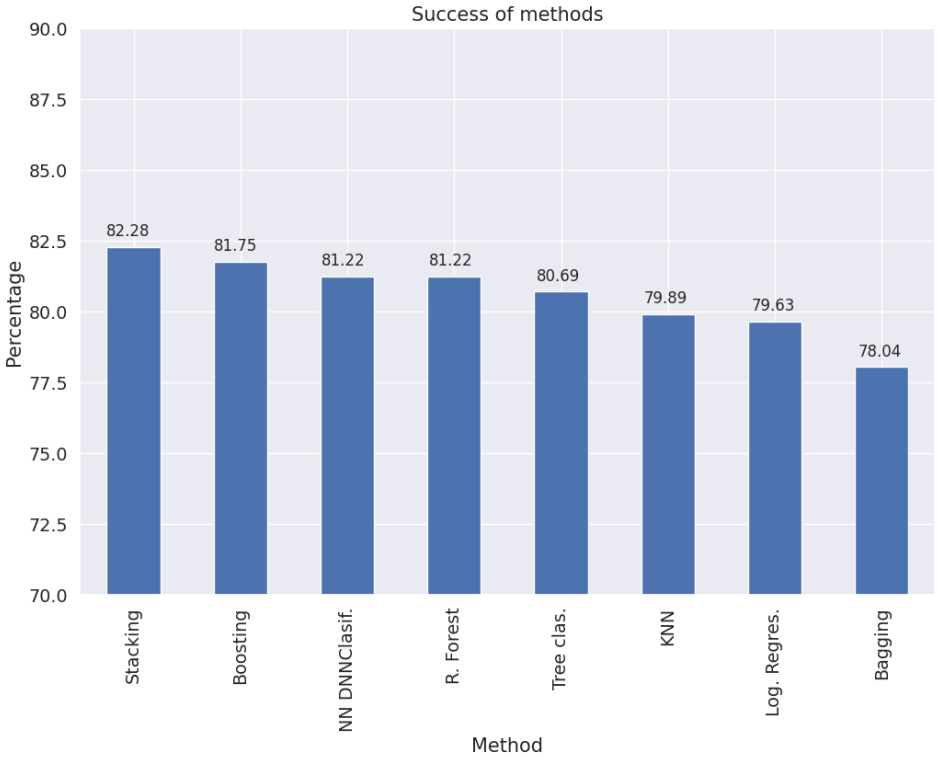
Source: https://www.frontiersin.org/

Data Visualization:





Model Accuracy:



Stacking(Chosen Model):

```python
def stacking():
  clf1 = KNeighborsClassifier(n_neighbors=1)
  clf2 = RandomForestClassifier(random_state=1)
  clf3 = GaussianNB()
  lr = LogisticRegression()
  estimators = [
    ('rf', clf1),
    ('dt', clf2),
    ('nb', clf3)
   ]

  stack = StackingClassifier(
    estimators=estimators,
    final_estimator=lr
  )
  stack.fit(X_train, y_train)

  y_pred_class = stack.predict(X_test)
  print('########### Stacking ###############')

  accuracy_score = evalClassModel(stack, y_test, y_pred_class, True)
  methodDict['Stacking'] = accuracy_score * 100
stacking()
```

```
########### Stacking ###############
Accuracy: 0.8227513227513228
```

Other Models:

```
def randomForest():
  forest = RandomForestClassifier(n_estimators = 20)
  featuresSize = feature_cols.__len__()
  param_dist = {"max_depth": [3, None],
              "max_features": randint(1, featuresSize),
              "min_samples_split": randint(2, 9),
              "min_samples_leaf": randint(1, 9),
              "criterion": ["gini", "entropy"]}
  tuningRandomizedSearchCV(forest, param_dist)
  forest = RandomForestClassifier(max_depth = None, min_samples_leaf=8, min_samples_split=2, n_estimators = 20, random_state = 1)
  my_forest = forest.fit(X_train, y_train)

  y_pred_class = my_forest.predict(X_test)

  print('########### Random Forests ###############')

  accuracy_score = evalClassModel(my_forest, y_test, y_pred_class, True)
  methodDict['R. Forest'] = accuracy_score * 100
randomForest()
```

```
Rand. Best Score:  0.8321206349206349
Rand. Best Params:  {'criterion': 'gini', 'max_depth': 3, 'max_features': 2, 'min_samples_leaf': 2, 'min_samples_split': 4}
[0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.832, 0.832, 0.831, 0.832, 0.831]
########### Random Forests ###############
Accuracy: 0.8121693121693122
```

```
def treeClassifier():
  tree = DecisionTreeClassifier()
  featuresSize = feature_cols.__len__()
  param_dist = {"max_depth": [3, None],
              "max_features": randint(1, featuresSize),
              "min_samples_split": randint(2, 9),
              "min_samples_leaf": randint(1, 9),
              "criterion": ["gini", "entropy"]}
  tuningRandomizedSearchCV(tree, param_dist)
  tree = DecisionTreeClassifier(max_depth=3, min_samples_split=8, max_features=6, criterion='entropy', min_samples_leaf=7)
  tree.fit(X_train, y_train)
  y_pred_class = tree.predict(X_test)

  print('########### Tree classifier ###############')

  accuracy_score = evalClassModel(tree, y_test, y_pred_class, True)
  methodDict['Tree clas.'] = accuracy_score * 100
treeClassifier()
```

```
Rand. Best Score:  0.8305206349206349
Rand. Best Params:  {'criterion': 'entropy', 'max_depth': 3, 'max_features': 6, 'min_samples_leaf': 7, 'min_samples_split': 8}
[0.819, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.804, 0.814, 0.83, 0.81, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.831, 0.83, 0.83]
########### Tree classifier ###############
Accuracy: 0.8068783068783069
```

After comparing different model Accuracies, we have chosen Stacking as our Machine Learning Model for predicting mental health. After that, the user of AI Psychiatrist is given a decision whether or not they need treatment for their mental illness or they can follow regular exercise and improvement methods to maintain their mental health and be stress-free.

Google Colab Link:
https://colab.research.google.com/drive/1wUylH3noR-Kle15Xhe3UAEsscaEpspiL?usp=sharing

12. Conclusion:

The AI/ML Psychiatrist prototype advances mental health assistance. This revolutionary approach uses artificial intelligence and machine learning to give accessible, personalised, and evidence-based mental health counselling. The AI/ML Psychiatrist customises examinations, suggestions, and therapies using natural language processing, machine learning models, and cognitive-behavioral therapy. This prototype might transform mental health assistance and empower people to manage their health with more refining and testing. The AI/ML Psychiatrist prototype lays the groundwork for future research and development at the interface of technology and mental health, enabling AI-driven solutions to improve global mental health.

Sources:

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