Yeshwantrao Chavan College of Engineering

Project Preliminary Investigation Report

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# Name of Department:

| COMPUTER SCIENCE AND ENGINEERING |
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# Name of Project Guide:

| Prof. Nikita P. Giradkar |
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# Name of Project Co - Guide (if any):

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# Students Details:

| **Roll No.** | **Name of Student** | **Email ID** | **Mobile No.** |
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# Title of the Project:

| Recognizing stages of Depression & Optimizing through Guided Imagery |
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# Area of Project Work:

| Machine Learning, Artificial Intelligence, Image processing |
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# Problem Statement:

| This project is to comprehensively understand and address the multifaceted stage posed by depression.  By image or emotion, some common and general input with basic or rational and related Depression symptoms and their stages (Normal, Mild, Moderate, severe, Extreme).  For normal or college students showing symptoms we try to recover them and calm them by Guided Imagery, it is a type of medication.  Those who have severe and Extreme, will be guided to a psychiatrist or medicator for recovery. |
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# Prior Art (Patent Search):

| PatentApplication No. | Title of Patent | Existing Solutions(Abstract of Patent) |
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| 201917047075 | Compositions and Methods for treating Depression | This application describes compositions of receptor inhibitors, including antipsychotic agents, for example haloperidol, and methods of use for alleviating clinical depression, improving cognition and/or treating other syndromes, conditions or diseases for which antidepressant agents are prescribed. Furthermore, this application describes compositions and methods to induce supersensitivity in dopamine D2 and other receptors involved in depression and/or cognition as a means of alleviating clinical depression or improving cognition. |

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# Literature Review:

| Title of Paper | Details of Publication with Date and Year | Literature Identified for Project |
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| Depression detection using emotional artificial intelligence and machine learning | Published by ScienceDirect  Author: Manju Lata Joshi et al.  Date: February 2022 | * This study analyzes how facial expressions, images, emotional chat\_x0002\_bots and texts on social media platforms can effectively detect one’s emotions and then depression. * Naïve-Bayes, support vector machines, long term short memory-Radial neural networks, logistic regression, linear support vector are various ML techniques used to recognize emotions from text processing. Artificial neural networks are used for feature extraction. |
| Deep Learning for depression detection from Textual Data | Published by MDPI  Author: Amna Amanat et al.  Date: 23 February 2022 | * Productive model by implementing a long short-term memory model, consisting of two hidden layers. Large bias with Recurrent Neural Network with two dense layers. * Train RNN on textual data to identify depression from text, semantics, and written content. |
| Machine Learning Algorithms for  Depression: Diagnosis,  Insights and Research Directions | Published by MDPI  Author: Shumaila Aleem et al.  Date: 31 March 2022 | * General model diag\_x0002\_nosis involving data extraction, pre-processing, training ML classifier, detection classification, performance evaluation. * Identify Objectives, limitations of different research studies presented in the domain. |
| Depression Detection using Machine learning techniques | Published by AiME  Author: Zahra M. et al.  Date: 2022 | * Twitter data is fed into different type of classifier i.e. Naive Bayes and Hybrid model, NBTree. |

## Current Limitations

| * Social media was the only option that was chosen for detection of depression through emotional and personal texts. * There is no optimization or resolution of those issues. * Only detection of depression is detected, not the stages or types. |
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## Proposed Solution

| The stages and depression detection is through the input of college students or people.  For optimization of those depression Guide imagery as an option is provided. |
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## Objectives and Scope of Work

| **Objectives**:   1. -Early detection of depression and awareness about depression. 2. -Identification of the stage of depression the person is suffering from. 3. -As a solution Guided Imagery Technique is to be provided. 4. -Support will be provided to the person. 5. -Decrease the cases of suicides of youngsters due to depression.   **Scope of Work:**  The work will be performed with the help of Al module and deep learning with some algorithm and regression (e.g. CNN, linear regression, Nonlinear regression, naived based, etc.) |
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# Feasibility Assessment:

## Expected Outcomes of the Project

| Outcome that is expected is to create a model which can accurately detect the stage of depression the person is suffering from and to optimize the symptoms by giving medication therapy using Guided Imagery. |
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## Innovation Potential

| **Combining Technology and Mental Health:** The integration of technology and mental health solutions is gaining traction. Your project's focus on using technology to aid in the detection and management of depression stages aligns with the growing interest in digital health solutions.  **Treatment:** Guided Imagery has the potential to provide personalized treatment options for individuals experiencing different stages of depression. Tailoring interventions based on a person's unique needs can lead to more effective outcomes.  **Early Detection:** Early detection of depression stages is crucial for timely intervention and improved outcomes. If your project succeeds in accurately detecting different stages of depression, it could contribute significantly to preventive mental health care.  **Non-Invasive Approach**: Guided Imagery offers a non-invasive approach to mental health treatment. This could appeal to individuals who are hesitant about traditional therapy methods or pharmaceutical interventions.  **Holistic Well-being**: Your project's focus on Guided Imagery suggests a holistic approach to mental well-being. This aligns with the trend toward incorporating mind-body techniques into mental health care.  **User-Friendly Interface**: If your project includes a user-friendly interface or app that delivers the Guided Imagery sessions, it could enhance accessibility and engagement, making it easier for individuals to participate in their own mental health care.  **Data-Driven Insights**: By collecting data on users' responses and progress, your project could offer valuable insights into how Guided Imagery affects different stages of depression. These insights could inform further research and improvements in the field.  **Research and Validation**: Ensure that your project is backed by robust research and validation. Demonstrating the effectiveness of Guided Imagery in detecting stages of depression and its impact on individuals' well-being will be essential for gaining credibility and support. |
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## Task Involved

| * Research and Literature review. * Data collection * Data Preprocessing * Feature selection and extraction using algorithm * Training and testing of the data * Calcification using algorithm * Monitoring the data * Detection of the stage of depression |
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## Expertise Required

| 1. **Inhouse Expertise**    1. Collection of data from different sites.    2. User Experience (UX) and User Interface (UI) Design    3. Software Development and Programming    4. Project Management    5. Continuous Improvement and Innovation    6. Improved interaction Skills 2. **External Expertise**    1. Data from psychiatrists and from professionals.    2. User Testing and Design Consultants |
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## Facilities Required

| 1. **Inhouse Facilities** 2. Workspace 3. Meeting room 4. User test facility 5. Development environment 6. Privacy compliance 7. **External Facilities**  * Clinical record |
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# Milestones and Time Plan

|  | Task | JULY2023 | AUG2023 | SEP2023 | OCT2023 | NOV2023 | DEC2023 | JAN2024 | FEB2024 | MAR2024 | APR2024 |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Design | Conceptual Design |  |  |  |  |  |  |  |  |  |  |
| Detailed design |  |  |  |  |  |  |  |  |  |  |
| Design Modifications |  |  |  |  |  |  |  |  |  |  |
| Final Design |  |  |  |  |  |  |  |  |  |  |
| Develop | Procurement  (If any) |  |  |  |  |  |  |  |  |  |  |
| Prototyping |  |  |  |  |  |  |  |  |  |  |
| Modifications |  |  |  |  |  |  |  |  |  |  |
| Deliver | Testing and Validation |  |  |  |  |  |  |  |  |  |  |
| Final Modifications |  |  |  |  |  |  |  |  |  |  |
| IPR / patent draft |  |  |  |  |  |  |  |  |  |  |
| Thesis and Poster |  |  |  |  |  |  |  |  |  |  |

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Name and Signature of Project Guide Signature of HOD