

# **DEPRESSION : A COMMON MENTAL HEALTH DISORDER**

## **PROJECT OVERVIEW**

In this project, our focus is on the development of a government-authorized plugin with a specific emphasis on mental health. This tool aims to identify potential signs of depression in various forms of online content. The project is aligned with the government's commitment to mental health awareness and intervention. Key components of the project include configuring search patterns, ensuring user support, addressing bugs and updates, accessing detailed information about at-risk individuals, ensuring infrastructure security and compliance, and continuous improvement of algorithms.

## **PURPOSE**

The fundamental purpose of this project is to contribute to mental health awareness and intervention by developing a government-authorized plugin. This sophisticated tool, driven by advanced search pattern algorithms, aims to identify potential signs of depression in online content. The project seeks to provide timely support for individuals exhibiting signs of depression, fostering a proactive approach to addressing mental health issues in the online sphere. Emphasizing user support, infrastructure security, and data privacy compliance ensures responsible and ethical use of the tool. Continuous improvement is a key focus, with ongoing enhancements to search pattern algorithms and overall performance.

## **LITERATURE SURVEY**

### **EXISTING PROBLEM**

Traditional therapies and medications for depression such as psychotherapy or pharmacological services are mostly time consuming, expensive, and ineffective. Major problem with these traditional methods is that, firstly these depression detection techniques need more patient data, their background, their history, and any past trauma related information, to predict symptoms of depression or these treatments need continuous monitoring on patient activities for prediction of depressed patient or not . And secondly, fear from public or society brings other negative consequences which may affect the diagnosis, patients intentionally hide their real response and conditions from doctors intentionally due to pressure from society and then they often mislead the treatment which consume more time for diagnosis .

## REFERENCES

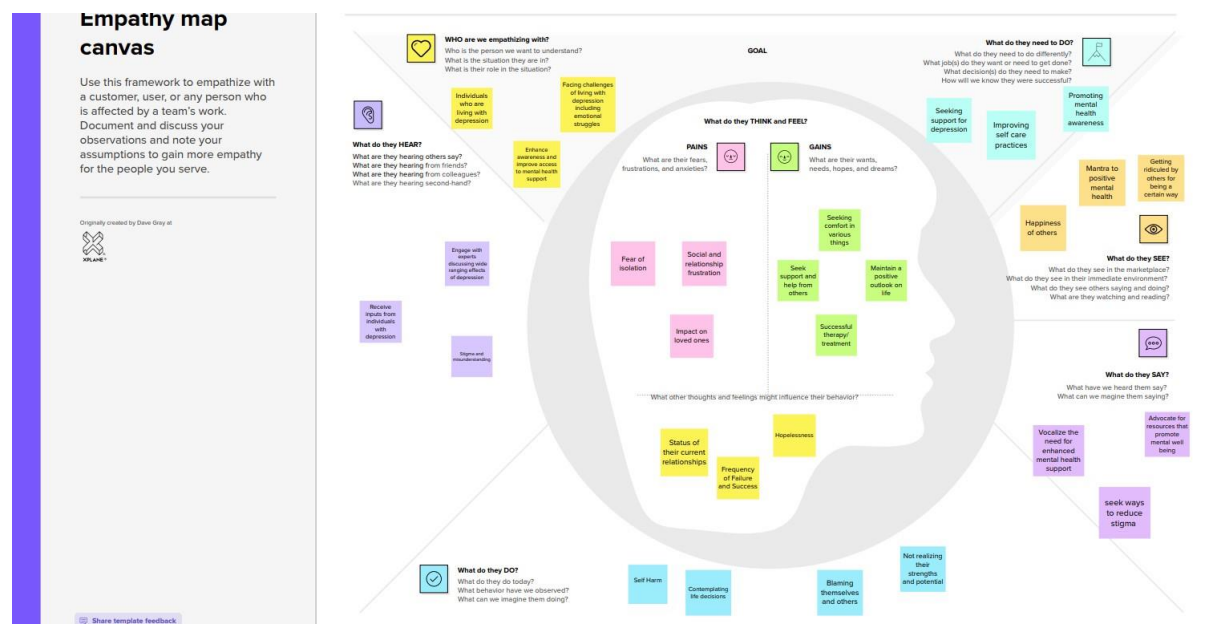
ResearchGate , PubMed, ScienceDirect

## PROBLEM STATEMENT

In the digital age, the absence of an effective tool to identify signs of depression in online content poses a significant challenge. Current approaches lack precision, face privacy concerns, and may not be culturally sensitive. This project seeks to build a government-endorsed plugin featuring advanced search patterns to tackle challenges, guaranteeing accuracy, ethical data handling, and seamless integration with existing health systems.

## IDEATION AND PROPOSED SOLUTION

## EMPATHY MAP CANVAS



# IDEATION AND BRAINSTORMING

## Brainstorm & idea prioritization

Use this template in your own brainstorming sessions so your team can unleash their imagination and start shaping concepts even if you're not sitting in the same room.

- 10 minutes to prepare
- 2 hours to collaborate
- 20 people recommended

### Before you collaborate

Take time to prepare ideas & bring along with this session. Here's what you need to do to get going.

- 10 minutes

- Brain gathering**  
Define the current problem in the session and what all stakeholders are contributing to the work ahead.
- Set the goal**  
Focus on the problem you're trying to solve by solving the problem in the brainstorming session.
- Learn how to use the facilitation tools**  
Use the Facilitation Tools to set a happy and productive session.

Open the session

### Define your problem statement

What problem are you trying to solve? Frame your problem as a How Might We statement. This will be the focus of your brainstorm.

- 10 minutes

Problem Statement

How Might We

Problem Statement

Key rules of brainstorming

To set an example and generate ideas:

- 1. Stay in topic
- 2. Stay positive
- 3. Stay on volume
- 4. Stay on ideas
- 5. Stay on ideas
- 6. Stay on ideas

### Brainstorm

Write down any ideas that come to mind that address your problem statement.

- 10 minutes

Person 1

Person 2

Person 1

Person 2

Need some help?

How to use this template

How to use this template

### Group ideas

Take time to bring your ideas into a structured format or related notes as you go. Once all ideas are in, group them into clusters. Give each cluster a sentence label. If a cluster is larger than the sticky notes, try and use a sticky note to label it up into another sub-group.

- 20 minutes

### Self Help

Self-help is crucial for depressed individuals as it empowers them to take control of their mental well-being. Self-help tools and strategies can complement professional treatment, offering a more comprehensive approach to healing.

Technical Tools

Medication

Self-help strategies

Socializing

Online mental health resources

Building relationships

Regaining motivation

Mental health monitoring and support group

Sentiment analysis tools

Service monitoring and feedback

Wearable device for mood monitoring

Crisis hotlines and chat support

### Therapy

Therapy is of paramount importance for individuals with depression, as it provides a structured, supportive environment for exploring emotions and finding coping strategies. Through therapy, people can gain a deeper understanding of their mental health, leading to lasting and positive changes in their lives.

Prescriptions

Behavioral Therapy

Cognitive Therapy

At enhanced medication

Employee Assistance Program (EAP)

Anti-depressants

Zoloft (SSRI)

### Prioritize

Your team should all be on the same page about what's important moving forward. Place your ideas on this grid to determine which ideas are important and which are feasible.

- 20 minutes

### After you collaborate

You can expect the result in an image or pdf to share with members of your company who might find it helpful.

- 20 minutes

Checklist

- 1. Review the result
- 2. Review the result
- 3. Review the result
- 4. Review the result
- 5. Review the result
- 6. Review the result
- 7. Review the result
- 8. Review the result
- 9. Review the result
- 10. Review the result
- 11. Review the result
- 12. Review the result
- 13. Review the result
- 14. Review the result
- 15. Review the result
- 16. Review the result
- 17. Review the result
- 18. Review the result
- 19. Review the result
- 20. Review the result

## REQUIREMENT ANALYSIS

### FUNCTIONAL REQUIREMENT

The solution design encompasses key functionalities to enhance the identification of potential signs of depression in online content. The Search Pattern Configuration aspect empowers administrators by providing a flexible interface to configure and customize search patterns, optimizing the precision of the identification process. Real-time Monitoring is a pivotal feature, ensuring the continuous and immediate observation of online content. Leveraging the configured search patterns, the system promptly identifies emerging signs of depression, contributing to timely intervention.

The Alert Generation mechanism plays a critical role in notifying designated authorities or support systems when content indicative of depression is detected. This proactive approach enhances the system's efficacy in facilitating timely assistance. User Privacy Protection is paramount in this solution, emphasizing adherence to stringent privacy standards.

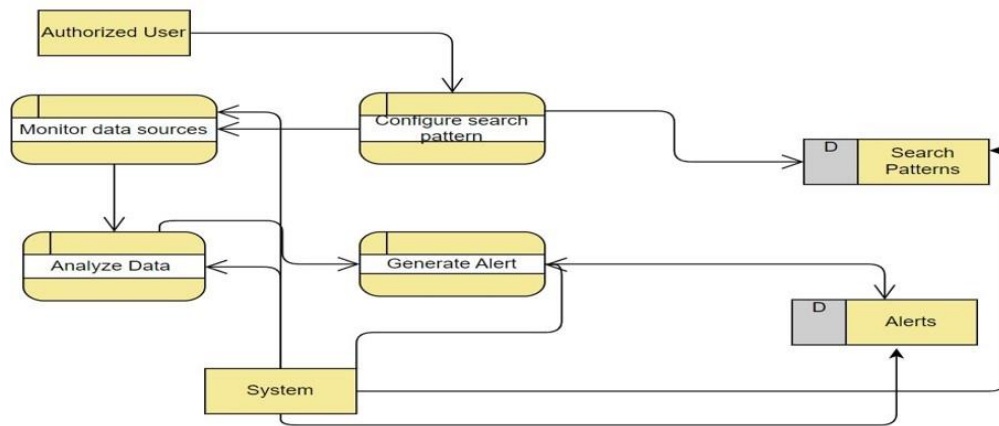
### NON FUNCTIONAL REQUIREMENT

The plugin is expected to deliver exceptional **performance**, ensuring a swift and efficient identification of potential signs of depression while maintaining a responsive system without significant lag. **Scalability** is a key consideration, with the system designed to seamlessly expand to accommodate increasing volumes of online content and users, prioritizing optimal performance throughout growth. High **reliability** is imperative, demanding a precise and accurate identification of potential signs of depression to minimize both false positives and negatives. The system's **availability** is a critical aspect, mandated to operate 24/7, ensuring continuous monitoring and timely responses to potential signs of depression. Additionally, the user interface is required to prioritize **usability**, being intuitive and user-friendly for administrators configuring search patterns and users accessing support resources, contributing to an efficient and accessible user experience.

## PROJECT DESIGN

### DATA FLOW DIAGRAM AND USER STORIES

**Data Flow Diagram (DFD):** A Data Flow Diagram is a graphical representation of how data moves through a system. It illustrates the flow of information between processes, data stores, and external entities. DFDs use symbols like circles, rectangles, and arrows to represent various elements and their relationships in a system. They provide a high-level view of data movement and processing within a project, helping to understand the data flow and interactions between different components.

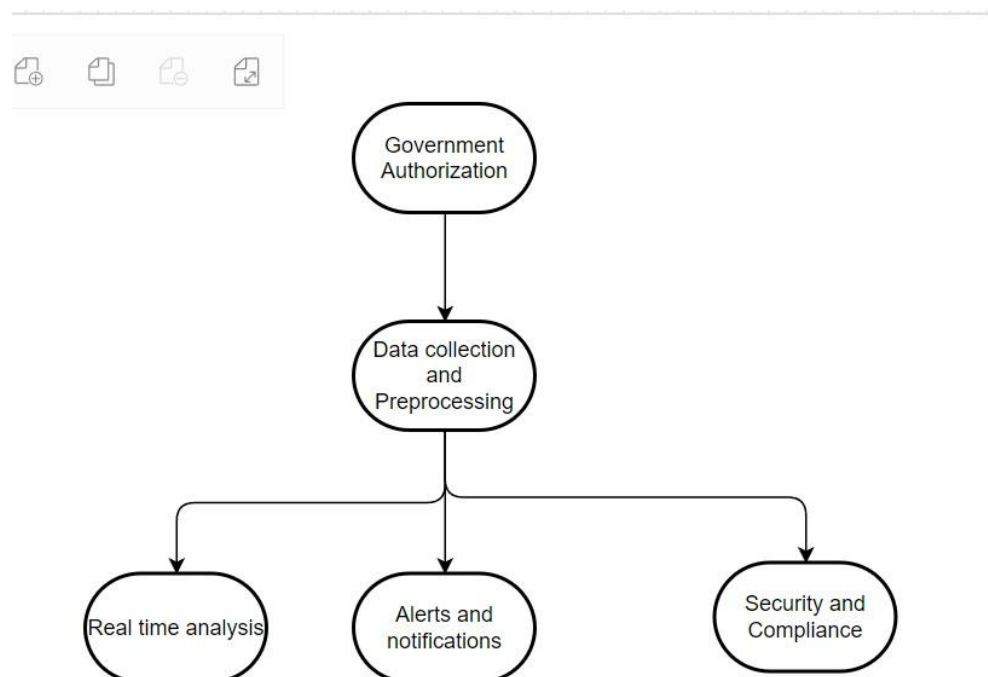


**User Stories:** User Stories are concise, user-focused descriptions of functionality or features within a project. They are written from an end-user perspective to capture what a user needs from the system. Typically written in a simple format like "As a [type of user], I want [an action] so that [benefit or goal]". User stories serve as a communication tool between stakeholders and development teams, helping prioritize features and understand the user's needs. They are often part of Agile development methodologies where they contribute to the iterative and customer-centric approach to project development.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance criteria	Priority	Release
Government authorized User	Search Pattern configuration	USN-1	Configure search patterns in the plugin to identify potential signs of depression in online content.	Successfully configure search patterns through the plugin's interface.	High	Sprint 1
Depression Analyst	Information Access	USN-2	Access detailed information about individuals identified as at-risk, including the content that triggered the alert.	Retrieve and review detailed information about at-risk individuals, including the content that triggered the alert.	High	Sprint 1
System Administrator	Security	USN-3	Ensure the plugin's infrastructure is secure, scalable, and compliant with data privacy regulations.	The infrastructure of the plugin complies with data privacy regulations, undergoes security audits, and scales effectively to handle increased loads.	High	Sprint 2
Helpdesk and support personnel	Support	USN-4	Assist users with any questions or technical issues they encounter while using the system.	Resolution of user queries within 24 hours.	High	Sprint 2
Compliance Officer	Compliance	USN-5	Verify that the plugin complies with all relevant data privacy regulations and legal requirements.	Confirm compliance with data privacy regulations and legal requirements.	High	Sprint 3
Software Developer	Maintenance	USN-6	Continuously improve the plugin's search pattern algorithms and overall performance.	Ongoing enhancement of	medium	Sprint 3

## SOLUTION ARCHITECTURE

Solution architecture in a project refers to the high-level structure and design of a comprehensive solution that addresses a particular set of challenges or requirements. It encompasses the design and organization of software, hardware, network infrastructure, data storage, and other key components to create a cohesive and effective system. The solution architecture provides a blueprint for how different elements of a project will interact and work together to achieve the project's objectives.



PROJECT PLANNING AND SCHEDULING

SPRINT PLANNING AND ARCHITECTURE

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	Search Pattern Configuration	USN-1	Configure search patterns in the plugin to identify potential signs of depression in online content	3	High	Member 1
Sprint-2	Information Access	USN-2	Access detailed information about individuals identified as at-risk, including the content that triggered the alert.	4	High	Member 2
Sprint-3	Security	USN-3	Ensure the plugin's infrastructure is secure, scalable, and compliant with data privacy regulations.	5	High	Member 1
Sprint-1	Support	USN-4	Assist users with any questions or technical issues they encounter while using the system.	2	High	Member 2
Sprint-4	Compliance	USN-6	Verify that the plugin complies with all relevant data privacy regulations and legal requirements.	4	medium	Member 1
Sprint-5	Maintenance	USN-7	Continuously improve the plugin's search pattern algorithms and overall performance.	4	medium	Member 1
Sprint-1	Testing & quality assurance	USN-8	Address bug reports and implement software updates in a timely manner	3	medium	Member 1 and 2

SPRINT DELIVERY SCHEDULE

Project Tracker, Velocity & Burndown Chart: (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	8	5 Days	1 Nov 2023	5 Nov 2023	7	10 November 2023
Sprint-2	4	4 Days	6 Nov 2023	9 Nov 2023	10	11 November 2023
Sprint-3	5	4 Days	10 Nov 2023	13 Nov 2023	17	13 November 2023
Sprint-4	4	2 Days	14 Nov 2023	16 Nov 2023	19	18 November 2023
Sprint-5	4	3 Days	17 Nov 2023	19 Nov 2023	25	20 November 2023

RESULTS

ADVANTAGES AND DISADVANTAGES

ADVANTAGES

The plugin designed to identify depression through search patterns offers several notable advantages. One of the primary benefits is its capacity for early detection, allowing the timely identification of potential signs of depression in online content. This early detection facilitates swift intervention and support for individuals at risk. The plugin is designed with scalability in mind, capable of handling increasing volumes of online content as digital platforms evolve. Real-time monitoring adds another layer of effectiveness, enabling the plugin to promptly identify emerging signs of depression. Administrators can customize search patterns, providing flexibility to adapt the plugin to different contexts and user behaviors. Proactive alerts generated by the plugin contribute to a proactive approach, notifying designated authorities or support systems upon detecting content indicative of depression. Moreover, the plugin prioritizes user privacy by adhering to strict standards, conducting the identification process without compromising individuals' privacy.

## **DISADVANTAGES**

However, the plugin comes with certain disadvantages. Algorithmic bias is a potential issue, as the effectiveness of the plugin may vary across demographic groups, introducing disparities in recognition. False positives and negatives pose challenges to the accuracy of the tool, potentially leading to instances where depression is incorrectly identified or missed. Cultural sensitivity may be a concern, as the interpretation of online content varies across cultures, impacting the accuracy of depression identification. User acceptance is another potential drawback, as some individuals may be resistant to automated systems analyzing their online behavior for mental health indications. Integration challenges with existing health systems or databases may arise, affecting the seamless flow of information across healthcare networks. Ethical concerns related to privacy, consent, and responsible data handling also need careful consideration in the deployment of such plugins.

## **CONCLUSION**

In conclusion, the development of a government-authorized plugin to identify depression through search patterns represents a crucial and innovative step in addressing mental health challenges in the digital realm. The project's advantages lie in its potential for early detection, scalability, real-time monitoring, and customization, offering a proactive approach to supporting individuals at risk. However, careful consideration must be given to potential disadvantages such as algorithmic bias, false positives/negatives, cultural sensitivity, and ethical concerns related to user privacy and acceptance. Despite these challenges, the project aligns with the imperative of leveraging technology to enhance mental health interventions.

## **FUTURE SCOPE**



The project's future scope involves implementing advanced machine learning and NLP algorithms for more accurate depression identification. Global collaboration ensures cultural sensitivity, while integration with telehealth services facilitates real-time support. Continuous user-centric design improvements, adherence to ethical guidelines, and privacy standards are priorities. The project aims to contribute to mental health research, collaborate with advocacy groups, and adapt to emerging platforms. Ongoing algorithm training, enhancements in reporting, and analytics features round out strategies for sustained relevance and positive impact.

### **GITHUB LINK**

<https://rohansaxena7.github.io/DepressionAnalysis/>

### **Excel and MySQL Link**

[https://drive.google.com/file/d/1J0J9eTyeXxWFY-2FGjNO11zdHKqkx1K9/view?usp=drive\\_link](https://drive.google.com/file/d/1J0J9eTyeXxWFY-2FGjNO11zdHKqkx1K9/view?usp=drive_link)

### **Tableau and vs code Link**

[https://drive.google.com/file/d/1gxu\\_wW-O4H3dxj0n7h2ZLqp6gld2dOKg/view?usp=drive\\_link](https://drive.google.com/file/d/1gxu_wW-O4H3dxj0n7h2ZLqp6gld2dOKg/view?usp=drive_link)

### **Website screenshot and GitHub link**

[https://drive.google.com/file/d/1rMS4-uMFEAIYSbewNi5Y\\_vqimYFrtSVr/view?usp=drive\\_link](https://drive.google.com/file/d/1rMS4-uMFEAIYSbewNi5Y_vqimYFrtSVr/view?usp=drive_link)