Ideation Phase
Brainstorm & Idea Prioritization Template

Date	18 October 2023
Team ID	592235
Project Name	Alzheimer Disease Prediction
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization :

The Alzheimer Disease Prediction project is a comprehensive initiative that utilizes cutting-edge technology to address the pressing challenge of early detection and intervention in Alzheimer's disease. Alzheimer's, a progressive and debilitating neurological disorder, poses significant health risks to older adults, impacting memory, cognition, and behavior. This project leverages deep learning models, including CNN, VGG16, and Xception, to analyze medical imaging data, thus identifying subtle signs of the disease before symptoms reach severe stages. The goal is to empower healthcare providers to offer timely treatment and support to affected individuals and their families, ultimately leading to improved outcomes and a better quality of life for those at risk of Alzheimer’s.

This initiative follows a structured approach, beginning with data collection and preprocessing, progressing through model development and performance testing, and culminating in the deployment of a user-friendly web application that integrates with Flask or Streamlit. The project not only focuses on technical aspects but also emphasizes usability, documentation, and long-term maintenance. By deploying a state-of-the-art solution and offering a user-friendly interface, the Alzheimer Disease Prediction project strives to make early Alzheimer's detection more accessible, enhancing the overall well-being of those affected by this devastating disease.

Step-1: Team Gathering, Collaboration and Select the Problem Statement

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
- **1 hour** to collaborate
- **2-8 people** recommended

Before you collaborate

A litter bit of preparation goes a long way with this session.Here's what you need to do get going

10 minutes

A **Team gathering**
Define who should participate in the session and send an invite. Share relevant information or pre-work ahead.

B **Set the goal**
Think about the problem you'll be focusing on solving in the brainstorming session.

C **Learn how to use the facilitation tools**
Use the Facilitation Superpowers to run a happy and productive session.

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1 Define your problem statement

The project aims to develop a deep learning-based solution, utilizing models like Xception, to analyze medical imaging data and identify early signs of Alzheimer's disease. Alzheimer's disease is a progressive and irreversible neurological disorder characterized by memory loss, cognitive impairment, and behavioral changes. Early detection of the disease is crucial for timely intervention and improved patient outcomes. This project seeks to harness AI technology to assist healthcare providers in identifying Alzheimer's disease at an early stage, facilitating early treatment and support for patients and their families, and ultimately enhancing the overall quality of care for individuals at risk of Alzheimer's disease."

5 minutes

PROBLEM

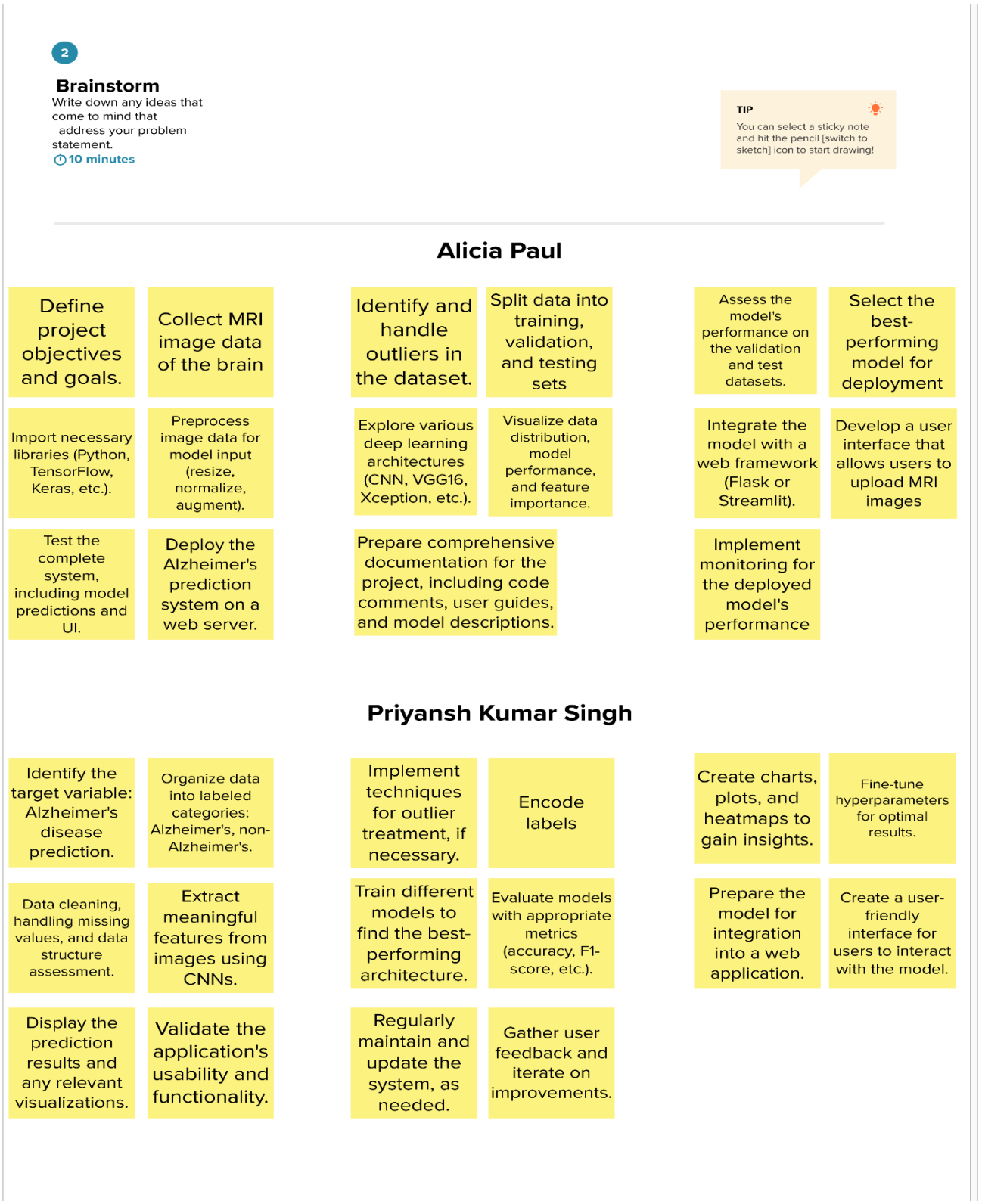
How might we[your problem statement]?

Key rules of brainstorming

To run an smooth and productive session

- Stay in topic.
- Encourage wild ideas.
- Defer judgment.
- Listen to others.
- Go for volume.
- If possible, be visual.

Step-2: Brainstorm, Idea Listing and Grouping



3

Group ideas

Take turns sharing your ideas while clustering similar or related notes as you go. Once all sticky notes have been grouped, give each cluster a sentence-like label. If a cluster is bigger than six sticky notes, try and see if you and break it up into smaller sub-groups.

20 minutes

TIP

Add customizable tags to sticky notes to make it easier to find, browse, organize, and categorize important ideas as themes within your mural.

Project Initiation

- Define project objectives and goals.
- Identify the target variable: Alzheimer's disease prediction.

Data Collection

- Collect MRI image data of the brain
- Organize data into labeled categories: Alzheimer's, non-Alzheimer's.

Data Preparation

- Import necessary libraries (Python, TensorFlow, Keras, etc.).
- Data cleaning, handling missing values, and data structure assessment.

Feature Engineering

- Preprocess image data for model input (resize, normalize, augment).
- Extract meaningful features from images using CNNs.

Outlier Detection and Treatment

- Identify and handle outliers in the dataset.
- Implement techniques for outlier treatment, if necessary.

Data Preprocessing

- Split data into training, validation, and testing sets
- Encode labels

Model Building

- Explore various deep learning architectures (CNN, VGG16, Xception, etc.).
- Train different models to find the best-performing architecture.

Data Visualization

- Visualize data distribution, model performance, and feature importance.
- Create charts, plots, and heatmaps to gain insights.

Performance Testing

- Assess the model's performance on the validation and test datasets.
- Fine-tune hyperparameters for optimal results.

Model Deployment

- Select the best-performing model for deployment
- Prepare the model for integration into a web application.

Web Application

- Integrate the model with a web framework (Flask or Streamlit).
- Create a user-friendly interface for users to interact with the model.

User Interface

- Develop a user interface that allows users to upload MRI images
- Display the prediction results and any relevant visualizations.

Testing and Validation

- Test the complete system, including model predictions and UI.
- Validate the application's usability and functionality.

Documentation

- Prepare comprehensive documentation for the project, including code comments, user guides, and model descriptions.

Deployment and Maintenance

- Regularly maintain and update the system, as needed.

Monitoring and Feedback

- Implement monitoring for the deployed model's performance
- Gather user feedback and iterate on improvements.

Step-3: Idea Prioritization

4

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

TIP

Participants can use their cursors to point at where sticky notes should go on the grid. The facilitator can confirm the spot by using the laser pointer holding the **H key** on the keyboard.