

Ideation Phase


Brainstorm & Idea Prioritization Template

Date	18 October 2023
Team ID	Team-593089
Project Name	Deep Learning Model for Detecting Diseases in Tea Leaves
Maximum Marks	5 Marks

Brainstorm & Idea Prioritization:


Brainstorming provides a free and open environment that encourages everyone within a team to participate in the creative thinking process that leads to problem solving. Prioritizing volume over value, out-of-the-box ideas are welcome and built upon, and all participants are encouraged to collaborate, helping each other develop a rich number of creative solutions.

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



Brainstorm & idea prioritization


Our brainstorming template fosters collaborative idea generation in a virtual setting. It prioritizes project introduction, emphasizes diversity of ideas and active participation, and incorporates efficient time management. The template underscores the power of documentation, recommending someone to capture insights for future reference. It empowers teams to collaboratively shape concepts using virtual facilitation tools.




Before you collaborate

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


🕒 10 minutes

 **Team gathering**


Identify key stakeholders: Data Scientists/Engineers, Tea Farmers/Experts, App Developers (if applicable), Project Managers. Send invitations with project details, session goals, and any pre-work participants should complete

 **Set the goal**

The main objective of the brainstorming session is to produce and rank ideas for the creation of a deep learning model designed for the identification of tea leaf diseases. The emphasis is on crafting a solution that assists tea farmers in early disease detection and prevention.

 **Learn how to use the facilitation tools**


To ensure a successful and positive session, master facilitation tools and techniques. Encourage diverse perspectives, emphasizing the facilitation superpower of leveraging varied thoughts. Manage time effectively with designated slots for each session phase. Leverage documentation to capture insights, assigning someone for accountability and follow-up. These facilitation techniques, combined with the right tools, create a collaborative and engaging environment for a successful brainstorming session.



Define your problem statement


Our challenge is to improve tea leaf disease detection, surpassing manual observation limits and time-consuming expert visits to remote gardens. The goal is to cut economic losses for tea farmers through a deep learning model analyzing images for color, spots, and texture. This solution aims to enhance tea production, increase farmers' income, and tackle diseases like tea algae leaf spot, tea bud blight, tea white scab, and tea leaf blight.

🕒 5 minutes


 **PROBLEM**


How might we achieve this?


Through a model analyzing tea leaf images for color, spots, and texture, we aim to promptly and affordably identify diseases like tea algae leaf spot, tea bud blight, tea white scab, and tea leaf blight. This solution aims to empower farmers, significantly cut economic losses, enhance tea quality, and ultimately boost income.


 **Key rules of brainstorming**


To run a 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

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Brainstorm

Capture and record any creative ideas or innovative thoughts that naturally arise in response to the given problem statement.

Srutakirti Bhowmik

- Create a website enabling tea farmers to photograph tea leaves.
- Incorporate a deep learning model for instant disease analysis.
- Integrate user-friendly interfaces and prompt notifications for swift disease alerts.

Parna Chaudhury

- Boost the model's accuracy through expert cooperation.
- Contemplate integrating a feedback mechanism in the website for users to validate or rectify disease predictions, refining the model gradually.

Ali Asgar Chandanwala

- Investigate the potential to gather more extensive data for disease detection.
- Introduce a capability for the model to not only identify diseases but also suggest personalized preventive measures.
- Partner with agricultural extension services to offer educational content on disease management through the website.

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Group ideas

Grouping ideas for tea leaf disease detection, where users can upload images to identify the disease type and receive information on precautions and prevention

1. User Interface and Experience:
 - Design the web page for user-friendliness.
 - Create an intuitive image upload feature.
 - Develop an appealing and informative user interface.
2. Image Processing and Analysis:
 - Implement image recognition algorithms for disease identification.
 - Develop a database of disease-related images for comparison.
 - Ensure accurate image analysis and diagnosis.
3. Disease Database and Knowledge Base:
 - Build a comprehensive database of tea leaf diseases.
 - Gather information on symptoms, causes, and precautions for each disease.
 - Ensure the database is regularly updated with new information.
4. precautionary Measures:
 - Provide clear and actionable precautionary advice for each identified disease.
 - Offer best practices for disease prevention and management.
5. Mobile Accessibility:
 - Optimize the web page for mobile devices, making it accessible to users on smartphones and tablets.
6. Community and Expert Involvement:
 - Encourage tea farmers and experts to contribute information and share experiences.
 - Foster a sense of community among users for knowledge sharing.

Step-3: Idea Prioritization

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Prioritize

1. Technical Feasibility:

- The selected method should be technically feasible in the context of tea leaf disease detection. This involves assessing whether the technology or approach is readily available, can be implemented without significant technical challenges, and aligns with the current infrastructure and expertise within the tea farming community. A technically feasible solution is one that can be effectively deployed without requiring overly specialized or complex resources.

2. Accuracy and Reliability:

- Accuracy and reliability are paramount in disease detection. The chosen method should minimize false positives and negatives, ensuring that when a disease is detected, it is indeed present, and when it's not, it is accurately ruled out. To achieve this, advanced algorithms, sensor technology, or testing procedures that have a track record of providing dependable results should be favored.

3. Cost-effectiveness:

- Cost-effectiveness is a crucial criterion, especially for tea farmers, who often operate within tight budgets. Prioritizing a cost-effective solution means carefully considering the expenses involved in equipment, training, maintenance, and any ongoing operational costs. It's important to choose a method that maximizes the value of disease detection while minimizing the financial burden on farmers.

4. Scalability:

- Scalability is essential, as the tea industry comprises a range of farm sizes and setups, from small family farms to large commercial plantations. The chosen method should be adaptable to different scales of tea farming, allowing it to be readily adopted by all stakeholders. This involves considerations such as ease of deployment, the ability to handle varying workloads, and scalability in terms of data management and analysis.

5. Early Detection:

- Prioritizing early disease detection means selecting a method that can identify diseases in their initial stages. Early detection is critical because it enables prompt and targeted action to contain the spread of diseases, reducing the overall impact on tea crops. Methods that can detect subtle symptoms or biochemical markers indicative of disease at an early stage should be preferred.