Idea Prioritization Template

Date: 1 July 2025

Team ID: [Enter your Team ID]

Project Name: CleanTech: Transforming Waste Management with Transfer Learning

Maximum Marks: 4 Marks

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

Problem Statement:  
Develop an AI-based tool to automate blood cell classification using transfer learning, improving diagnostic accuracy and reducing the burden on healthcare professionals.

Why This Problem?  
Manual classification of blood cells is time-consuming, error-prone, and requires trained pathologists. Automating this with machine learning can improve accuracy and enable remote diagnostics.

# Step-2: Brainstorm, Idea Listing and Grouping

Ideas Generated:

* Use VGG16 pre-trained CNN for transfer learning.
* Apply data augmentation for better generalization.
* Use Flask for a lightweight and deployable web interface.
* Enable real-time predictions from uploaded images.
* Build a GUI for use in medical colleges for training.
* Integrate the system with telemedicine portals.
* Deploy on cloud platforms for remote accessibility.
* Include interpretability features like Grad-CAM heatmaps.
* Add multilingual support for broader usability.
* Use the system for both diagnosis and medical training.

Grouping:

Technical Solutions: 1, 2, 4, 8

Application Integration: 3, 6, 7, 9

Educational Use: 5, 10

# Step-3: Idea Prioritization

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| Idea No. | Idea Description | Impact | Feasibility | Priority |
| 1 | Use VGG16 for transfer learning | High | High | ⭐⭐⭐⭐⭐ |
| 2 | Data augmentation | High | High | ⭐⭐⭐⭐⭐ |
| 3 | Flask-based web application | High | High | ⭐⭐⭐⭐⭐ |
| 4 | Real-time prediction from images | High | Medium | ⭐⭐⭐⭐☆ |
| 5 | GUI for medical student training | Medium | High | ⭐⭐⭐⭐☆ |
| 6 | Telemedicine integration | High | Medium | ⭐⭐⭐☆☆ |
| 7 | Cloud deployment | High | Medium | ⭐⭐⭐⭐☆ |
| 8 | Add Grad-CAM or saliency maps for explainability | Medium | Medium | ⭐⭐⭐☆☆ |
| 9 | Multilingual support | Medium | Low | ⭐⭐☆☆☆ |
| 10 | Dual-use for training and diagnosis | High | High | ⭐⭐⭐⭐⭐ |