

## Ideation Phase

### Brainstorm & Idea Prioritization Template

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|---------------|--|
| Date          | 22 January 2026  |
| Team ID       | LTVIP2026TMIDS55747  |
| Project Name  | Hematovision: Advanced Blood Cell Classification Using Transfer Learning |
| Maximum Marks | 4 Marks  |

### Brainstorm & Idea Prioritization Template:

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 amount of creative solutions.

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.

Reference: <https://www.mural.co/templates/brainstorm-and-idea-prioritization>

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

**Problem Statement:** How might we leverage deep learning and transfer learning to automate the classification of white blood cells into four distinct types to reduce manual diagnostic errors and improve laboratory efficiency?

### Step-2: Brainstorm, Idea Listing and Grouping

Below are the core ideas generated during our collaborative session to address the problem statement:

- Model Architectures:** \* MobileNetV2 for lightweight and fast processing.
  - ResNet50 for deeper feature extraction.
  - Vision Transformers (ViT) for global context analysis.
- Data Processing Features:** \* Automated image resizing to  $224 \times 224$  pixels.
  - Pixel normalization to stabilize training math.
  - Pre-augmentation (rotations/flips) to prevent overfitting.
- System Implementation:** \* Flask web application for a user-friendly clinical interface.
  - Real-time confidence score display for every prediction.
  - Automated flagging of low-confidence results for manual review.

### Step-3: Idea Prioritization

We evaluated our ideas based on **Importance** (clinical impact) and **Feasibility** (technical/hardware limits):

- **High Importance / High Feasibility (Top-Right): \* MobileNetV2 Architecture:**  
Chosen as our core engine because it offers 94.8% accuracy while being fast enough (250ms) for standard hardware.
  - **Automated Preprocessing Pipeline:** Essential for ensuring data consistency without manual effort.
- **High Importance / Low Feasibility (Top-Left): \* Vision Transformers:** These offer high potential for accuracy but were deprioritized due to their heavy computational requirements and slow inference speeds.
- **Low Importance / High Feasibility (Bottom-Right): \* Expanding Dataset Classes:**  
While easy to do, adding more cell subtypes at this stage could reduce the stability of our primary classification goals.