# HematoVision - Functional & Performance Testing Report

Date: 23rd June 2025

Team ID: LTVIP2025TMID35127

Project Name: HematoVision - Blood Cell Classification using Deep Learning

Test Type: Functional & Performance Testing

## Test Scenarios & Results

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| Test Case ID | Scenario (What to test) | Test Steps (How to test) | Expected Result | Actual Result | Status |
| FT-01 | Image Input Validation | Upload a valid image and an invalid format (e.g., `.txt`) | Accepts image only, rejects invalid files | Valid image accepted, invalid format rejected | ✅ Pass |
| FT-02 | Class Prediction Accuracy | Upload known blood cell images (e.g., monocyte, neutrophil) | Correct classification label is displayed | Predicted classes matched labels | ✅ Pass |
| FT-03 | Model Response Workflow | Upload file → Press Predict | Response includes predicted class + cell image preview | Working as expected | ✅ Pass |
| FT-04 | Flask App Route Validation | Access `/` and `/predict` endpoints | Home page loads, prediction works | All endpoints responded correctly | ✅ Pass |
| FT-05 | File Upload UI Functionality | Check file browse and preview actions | File uploaded, name visible | File selected correctly and sent | ✅ Pass |
| PT-01 | Model Response Time | Upload and record prediction time | Prediction completes under 3 seconds | Avg time: 2.1s | ✅ Pass |
| PT-02 | Concurrent Predictions | Send 3–5 simultaneous uploads using multiple browser tabs | All return results without lag or crash | Smooth performance observed | ✅ Pass |
| PT-03 | Load Handling on File Upload | Upload large-size but valid image files | Model should still respond accurately | Responded well up to ~5MB image | ✅ Pass |
| PT-04 | Dataset Handling During Training | Load Kaggle dataset during model training | Model trains without memory overflow | Completed training with 99% accuracy, no crash | ✅ Pass |
| PT-05 | Invalid Image Handling | Upload a non-blood-cell image | Should show error or fallback prediction | Error handled gracefully | ✅ Pass |

## 📌 Notes:

- Testing performed manually through Flask app running locally.

- Dataset used: Kaggle Blood Cell Dataset (https://www.kaggle.com/datasets/paultimothymooney/blood-cells/data)

- Model file used: Blood Cell.h5

- Flask routes tested: `/`, `/predict`