ProjectDesignPhase

ProposedSolutionTemplate

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| Date | 26 JUNE 2025 |
| Team ID | LTVIP2025TMID43759 |
| ProjectName | HematoVision: Advanced Blood Cell ClassificationUsingTransferLearning |
| MaximumMarks | 4 Marks |

**ProposedSolutionTemplate:**

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| S.No. | Parameter | Description |
| 1. | Problem Statement (Problemtobesolved) | Manual classification of blood cells under the microscope is time- consuming and prone to errors, particularly in busy pathology labs. Accurate cell identification is crucial fordiagnosingdiseaseslike leukemia, infections, or allergies.Faster,automated solutions are needed for  betterpatient outcomes. |
| 2. | Idea/Solutiondescription | We propose HematoVision, an AI-based blood cell classification system using transfer learning models (e.g., ResNet, EfficientNet). Medicalstaffcanuploadcell images via a web app, and the system will predict the cell type (Neutrophil, Lymphocyte, Monocyte,  Eosinophil)withconfidence scores to assist diagnostics. |
| 3. | Novelty/Uniqueness | Uses advanced deep learningforhighaccuracy. Reduces dependence on manual microscopy.  Trained on a specificdatasetofbloodcellimages. Designed for easy adoption by labs without complex  hardware. |

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|  |  | Potentialtoexpand to  detectabnormal/malignant cells in future versions. |
| 4. | SocialImpact/Customer Satisfaction | Improves speed and accuracy of diagnoses. Reducesworkloadoflab technicians.  Helps early detection of blood-relateddisorders. Improves healthcare quality.  Empowershealthcare  facilitieswithadvanced diagnostic tools. |
| 5. | BusinessModel(Revenue Model) | Freemiummodel:freebasic predictions, paid advanced reports.  Licensing to hospitals, diagnosticlabs,orhealth- tech firms.  Subscription-basedaccess for larger institutions.  Potentialpartnershipswith medical device companies. APIservicesforintegration  intoexistinglabsystems. |
| 6. | ScalabilityoftheSolution | Easily deployable on local hospital systems or cloud. Expandabletoclassifymore cell types (e.g., blasts in leukemia).  Scalabletointegrateinto ElectronicHealthRecord systems.  Adaptable to multiple languages and regions. Suitableforsmalllabsor  largehospitals. |