

Model Development Phase Template

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID33348 |
| Project Title | Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Advanced Machine Learning Techniques |
| Maximum Marks | 5 Marks |

Feature Selection Report Template:

In the forthcoming update, each feature will be accompanied by a brief description. Users will indicate whether it's selected or not, providing reasoning for their decision. This process will streamline decision-making and enhance transparency in feature selection.

| Feature | Description | Selected (Yes/No) | Reasoning |
|--|------------------------------------|-------------------|--|
| Age | Age of the patient | Yes | Age can be a significant factor in the likelihood of developing liver cirrhosis. |
| Gender | Gender of the patient | Yes | Gender may influence medical conditions and treatment responses, including liver diseases. |
| Place | Location where the patient lives | Yes | Can help to know about the distribution of people. |
| Duration of alcohol consumption (years) | Years of alcohol consumption | Yes | Long-term alcohol consumption is a major risk factor for liver cirrhosis. |
| Quantity of alcohol consumption (quarters/day) | Daily alcohol consumption quantity | Yes | Quantity of alcohol consumed is directly related to liver health. |
| Type of alcohol consumed | Type of alcohol consumed | Yes | Different types of alcohol may have varying effects on liver health |
| Hepatitis B infection | Presence of Hepatitis B infection | No | Hepatitis B infection is not the primary focus of this study. |
| Hepatitis C infection | Presence of Hepatitis C infection | No | Hepatitis C infection is not the primary focus of this study. |
| Diabetes Result | Presence of diabetes | No | Diabetes results are not the primary focus of this study. We will check it with a prediction |
| Blood pressure (mmhg) | Blood pressure measurement | Yes | High blood pressure can be an indicator of overall health and impact liver function |
| Obesity | Obesity status | Yes | Obesity is a known risk factor for liver disease |
| Family history of | Family history of | | Genetic predisposition can |

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| cirrhosis/ hereditary | cirrhosis or hereditary factor | Yes | significantly impact the risk of liver cirrhosis. |
| TCH | Total Cholesterol | No | TCH is not the primary focus of this study. |
| TG | Triglycerides | No | TG is not the primary focus of this study. |
| LDL | Low-Density Lipoprotein | No | LDL is not the primary focus of this study. |
| HDL | High-Density Lipoprotein | No | HDL is not the primary focus of this study |
| Hemoglobin (g/dl) | Hemoglobin level in the blood | Yes | Hemoglobin levels can reflect overall health and indirectly impact liver health. |
| PCV (%) | Packed Cell Volume percentage | Yes | PCV levels provide information on the volume percentage of red blood cells in the blood. |
| RBC (million cells/microliter) | Red Blood Cell count | Yes | RBC count can indicate overall health status. |
| MCV (femtoliters/cell) | Mean Corpuscular Volume | Yes | MCV levels provide information on the size of red blood cells. |
| MCH (picograms/cell) | Mean Corpuscular Hemoglobin | Yes | MCH levels provide information on the amount of hemoglobin per red blood cell. |
| MCHC (grams/deciliter) | Mean Corpuscular Hemoglobin Concentration | Yes | MCHC levels provide information on the concentration of hemoglobin in red blood cells. |
| Total Count | Total White Blood Cell Count | Yes | Elevated white blood cell count can indicate inflammation or infection affecting the liver. |
| Polymorphs (%) | Percentage of polymorphonucle ar cells | Yes | High levels of polymorphs can indicate infection or inflammation |
| | Percentage of | | Lymphocyte levels can indicate |

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| Lymphocytes (%) | lymphocytes | Yes | immune response. |
| Monocytes (%) | Percentage of monocytes | Yes | Monocyte levels can indicate chronic inflammation or infection |
| Eosinophils (%) | Percentage of eosinophils | Yes | Elevated eosinophils can indicate allergic reactions or parasitic infections affecting the liver. |
| Basophils (%) | Percentage of basophils | Yes | Basophil levels can indicate immune response or inflammation |
| Platelet Count (lakhs/mm) | Platelet count in the blood | Yes | Platelet count can indicate liver function, as the liver produces clotting factors. |
| Total Bilirubin (mg/dl) | Total bilirubin level in the blood | No | Total Bilirubin is not the primary focus of this study. |
| Direct (mg/dl) | Direct bilirubin level in the blood | Yes | Direct bilirubin levels provide specific insights into liver function. |
| Indirect (mg/dl) | Indirect bilirubin level in the blood | Yes | Indirect bilirubin levels can help identify liver function abnormalities. |
| Total Protein (g/dl) | Total protein level in the blood | Yes | Protein levels can reflect overall liver function. |
| Albumin (g/dl) | Albumin level in the blood | Yes | Low albumin levels are a common indicator of liver cirrhosis. |
| Globulin (g/dl) | Globulin level in the blood | Yes | Globulin levels provide additional information on liver function. |
| A/G Ratio | Albumin to Globulin Ratio | No | A/G Ratio is not the primary focus of this study. |
| AL.Phosphatase (U/L) | Alkaline Phosphatase level in the blood | Yes | Elevated levels can indicate liver disease or bile duct obstruction. |
| SGOT/AST (U/L) | Aspartate Aminotransferase level in the blood | Yes | An important marker for liver health, high levels suggest liver damage. |

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| SGPT/ALT (U/L) | Alanine Aminotransferase level in the blood | Yes | High levels may signal liver damage or inflammation. |
| USG Abdomen | Ultrasound of the abdomen indicating diffuse liver or not | Yes | Ultrasound results can provide direct evidence of liver abnormalities. |
| Outcome | Predicted value (whether the patient is suffering from liver cirrhosis or not) | Yes | The target variable for predictive modeling – essential for the project's goal. |