Ideation Phase
Brainstorm & Idea Prioritization Template

Date	31 January 2025
Team ID	LTVIP2025TMID35624
Project Name	Revolutionizing Liver Care: Predicting Liver Cirrhosis Using Advanced Machine Learning Techniques
Maximum Marks	4 Marks

Brainstorm & Idea Prioritization Template:

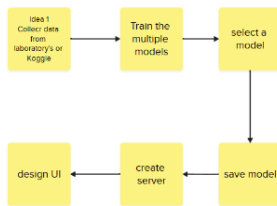**Step-1: Team Gathering, Collaboration and Select the Problem Statement**
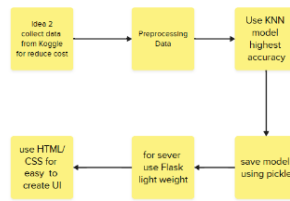

Step-2: Brainstorm, Idea Listing and Grouping

Brainstorm

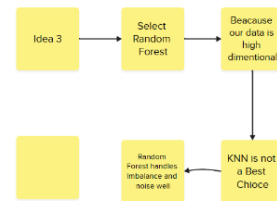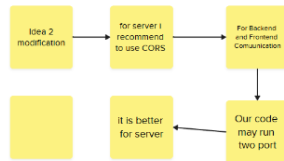write down any ideas that comes to mind that address our Problem statement

Thathireddy Eswarreddy

Idea 1 Collect data from laboratory's or Koggle → Train the multiple models → select a model

design UI ← create server ← save model ← select a model

Dasari Gowthami

Idea 2 collect data from Koggle for reduce cost → Preprocessing Data → Use KNN model highest accuracy

use HTML/CSS for easy to create UI ← for sever use Flask light weight ← save model using pickle ← Use KNN model highest accuracy

Golla Navitha

Idea 3 → Select Random Forest → Beacause our data is high dimentional

Random Forest handles imbalance and noise well ← KNN is not a Best Chioce ← Beacause our data is high dimentional

Baripireddy Sai Chandhanreddy

Idea 2 modification → for server I recommend to use CORS → For Backend and Frontend Comunication

it is better for server ← Our code may run two port ← For Backend and Frontend Comunication

D Harsha Vardhan

For all Ideas → For Deployment Project → In Global Environment

frontend netlify.app   Backend: onrender.com   Use onrender.com and netlify.app ← In Global Environment

---
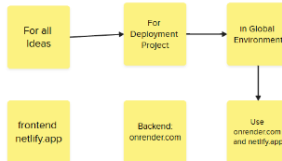
Group Idea

1. Data Collection & Preprocessing
   - Perform preprocessing steps such as:
     - Handling missing values
     - Encoding categorical variables (e.g., gender, yes/no lifestyle factors)
     - Normalizing continuous features
     - Feature selection to retain only the most relevant attributes
   · Data Exploration and Preprocessing
   o Univariate Analysis: Histograms were plotted for numerical features.
   o Bivariate Analysis: Scatter plots and pair plots explored relationships between features.
   o Outlier Handling: Outliers were detected and managed using the IQR method.
2. Model Development
   - Train and evaluate multiple machine learning algorithms, including:
     - Random Forest
     - Naïve Bayes
     - XG Boost
     - Logistic Regression CV
     - Random Forest
     - Support Vector Classifier
     - Ridge Classifier
     - Logistic Regression
     - K-Nearest Neighbors (KNN)
   - Apply cross-validation and hyperparameter tuning to optimize performance.
   - Use evaluation metrics: Accuracy, Precision, Recall, F1-score, and Confusion Matrix to validate the models.
3. Model Selection

   We will select and optimize the best model based on performance metrics to achieve the highest accuracy.
4. Prediction
   - Generate predictions in the form of: Binary classification (Cirrhosis: Yes/No)
5. Interface Design
   - Building a user-friendly web or mobile platform using tools like: HTML/ CSS +JavaScript(Frontend),Flask (Backend)

Users can input lab results and receive the Prediction results.

Step-3: Idea Prioritization