Project Planning Phase

Project Planning Template (Product Backlog, Sprint Planning, Stories, Story points)

Field	Details
Date	28 June 2025
Team ID	LTVIP2025TMID45560
Project Name	Revolutionizing Liver Care: Predicting Liver Cirrhosis using Advanced Machine Learning Techniques
Team Members	MASABATTULA DIVYA (S201086), KOTA HEMALATHA (S200381)
Maximum Marks	5 Marks

Product Backlog, Sprint Schedule, and Estimation (4 Marks)

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task	Story Points	Priority	Team Members
Sprint-1	**Data Collection & Setup**	USN-1	As a data scientist, I need to collect and acquire liver disease dataset with clinical parameters for model training	3	High	Divya, Hemalatha
Sprint-1		USN-2	As a developer, I need to set up the development environment with Python, pandas, scikit-learn, and other ML libraries	2	High	Divya
Sprint-1		USN-3	As a data analyst, I need to perform initial data exploration to understand dataset structure and features	2	High	Hemalatha
Sprint-2	**Data Preprocessing**	USN-4	As a data scientist, I need to handle missing values and outliers in the dataset	3	High	Hemalatha
Sprint-2		USN-5	As a data scientist, I need to encode categorical variables and normalize numerical features	2	High	Divya
Sprint-2		USN-6	As a data analyst, I need to perform feature selection and correlation analysis	3	Medium	Divya, Hemalatha
Sprint-3	**Model Development**	USN-7	As a ML engineer, I need to implement Logistic Regression model for liver cirrhosis prediction	2	High	Divya
Sprint-3		USN-8	As a ML engineer, I need to implement KNN and SVM models for comparison	3	High	Hemalatha
Sprint-3		USN-9	As a ML engineer, I need to implement Random Forest and XGBoost models	3	High	Divya
Sprint-3		USN-10	As a developer, I need to split data into training and testing sets	1	High	Hemalatha

Sprint	Functional Requirement (Epic)	User Story Number	User Story / Task (80:20 ratio)	Story Points	Priority	Team Members
Sprint-4	**Model Evaluation**	USN-11	As a ML engineer, I need to evaluate all models using accuracy, precision, recall, and F1-score	3	High	Divya, Hemalatha
Sprint-4		USN-12	As a data scientist, I need to perform hyperparameter tuning for best model performance	4	High	Divya
Sprint-4		USN-13	As a analyst, I need to create confusion matrices and performance comparison tables	2	Medium	Hemalatha
Sprint-5	**Web Application Development**	USN-14	As a developer, I need to create Flask backend application for model deployment	4	High	Divya
Sprint-5		USN-15	As a frontend developer, I need to create HTML forms for user input of clinical parameters	3	High	Hemalatha
Sprint-5		USN-16	As a developer, I need to integrate trained ML model with Flask application	3	High	Divya
Sprint-6	**Testing & Documentation**	USN-17	As a developer, I need to test the web application with sample data inputs	2	High	Hemalatha
Sprint-6		USN-18	As a team member, I need to create comprehensive project documentation and thesis	4	High	Divya, Hemalatha
Sprint-6		USN-19	As a developer, I need to prepare deployment demo and screenshots	2	Medium	Divya

---

Project Tracker, Velocity & Burndown Chart (4 Marks)

Sprint	Total Story Points	Duration	Sprint Start Date	Sprint End Date (Planned)	Story Points Completed (as on Planned End Date)	Sprint Release Date (Actual)
Sprint-1	7	3 Days	15 June 2025	17 June 2025	7	17 June 2025
Sprint-2	8	4 Days	18 June 2025	21 June 2025	8	21 June 2025
Sprint-3	9	4 Days	22 June 2025	25 June 2025	9	25 June 2025
Sprint-4	9	3 Days	26 June 2025	28 June 2025	9	28 June 2025
Sprint-5	10	3 Days	29 June 2025	1 July 2025	-	-
Sprint-6	8	2 Days	2 July 2025	3 July 2025	-	-

Total Project Duration: 19 Days
Total Story Points: 51

Velocity Calculation

Team Velocity Analysis:

- **Sprint 1:** 7 points ÷ 3 days = 2.33 points/day
- **Sprint 2:** 8 points ÷ 4 days = 2.0 points/day
- **Sprint 3:** 9 points ÷ 4 days = 2.25 points/day
- **Sprint 4:** 9 points ÷ 3 days = 3.0 points/day

Average Velocity: (2.33 + 2.0 + 2.25 + 3.0) ÷ 4 = **2.39 points per day**

Team Capacity: 2 team members × 6 hours/day = 12 hours/day
Velocity per Hour: 2.39 ÷ 12 = **0.199 story points per hour**

Burndown Chart Analysis

Ideal vs Actual Progress:

Day	Remaining Story Points (Ideal)	Remaining Story Points (Actual)
Day 0	51	51
Day 3	44	44 (Sprint 1 Complete)
Day 7	36	36 (Sprint 2 Complete)
Day 11	27	27 (Sprint 3 Complete)
Day 14	18	18 (Sprint 4 Complete)
Day 17	8	TBD (Sprint 5 in Progress)
Day 19	0	TBD (Sprint 6 Target)

Risk Management & Mitigation

Risk	Impact	Probability	Mitigation Strategy
Dataset quality issues	High	Medium	Implement robust data validation and cleaning procedures
Model performance below expectations	High	Low	Use ensemble methods and hyperparameter tuning
Flask deployment issues	Medium	Low	Test deployment early and maintain backup plans
Time constraints	Medium	Medium	Prioritize high-value features and maintain MVP scope

---

Definition of Done (DoD)

For Data Science Tasks:

- [ ] Code is tested and validated
- [ ] Performance metrics documented
- [ ] Code is peer-reviewed
- [ ] Results are reproducible

For Development Tasks:

- [ ] Feature is implemented and tested
- [ ] Code follows coding standards
- [ ] Documentation is updated
- [ ] Integration testing completed

For Documentation Tasks:

- [ ] Content is technically accurate
- [ ] Formatting follows template
- [ ] Peer review completed
- [ ] Final version approved

Sprint Goals

Sprint 1: Establish project foundation with data collection and environment setup
Sprint 2: Clean and prepare data for machine learning model development
Sprint 3: Develop and train multiple ML models for liver cirrhosis prediction
Sprint 4: Evaluate and optimize model performance with comprehensive testing
Sprint 5: Deploy best-performing model as a web application using Flask
Sprint 6: Complete testing, documentation, and project delivery

---

Success Criteria

1. **Technical:** Achieve >85% accuracy in liver cirrhosis prediction
2. **Functional:** Deploy working web application for real-time predictions
3. **Documentation:** Complete comprehensive thesis and technical documentation
4. **Timeline:** Deliver project within planned 19-day timeline
5. **Quality:** Pass all testing phases and peer reviews