**Ideation Phase**

**Empathize & Discover**

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| Date | 28 JUNE 2025 |
| Team ID | LTVIP2025TMID60863 |
| Project Name | Revolutionizing liver care; predicting liver cirrhosis using advanced machine learning techniques |
| Maximum Marks | 4 Marks |

Revolutionizing liver care; predicting liver cirrhosis using advanced machine learning techniques

**Empathy Map Canvas:**

Certainly! Let's take the concept of an **Empathy Map**—originally used for understanding users in a food delivery app—and **adapt it to a healthcare setting**: predicting **liver cirrhosis using advanced machine learning techniques**.

**🧠 Empathy Map for Liver Cirrhosis Prediction ML System**

**User**: Healthcare professionals (doctors, clinicians, medical researchers)  
**Secondary user**: Patients at risk of or currently being monitored for liver cirrhosis

**1. SAYS**

What the user is saying out loud:

* “I need early and accurate predictions to improve patient outcomes.”
* “We need a tool that integrates easily into our workflow.”
* “False positives and negatives can be dangerous.”
* “Is this model interpretable? Can I trust its predictions?”

**2. THINKS**

What the user is thinking (but might not say out loud):

* “I’m skeptical of black-box algorithms.”
* “Will this help reduce my workload or just add more?”
* “Can this replace or support traditional diagnostics?”
* “I’m worried about liability if the model makes an error.”

**3. DOES**

What the user does:

* Reviews patient history, lab tests (ALT, AST, bilirubin, etc.)
* Uses diagnostic tools (ultrasound, biopsy)
* Makes clinical decisions based on medical judgment
* Occasionally interacts with electronic health record (EHR) systems

**4. FEELS**

What the user feels:

* Cautious optimism about AI/ML in medicine
* Pressure to reduce diagnostic errors and improve care
* Overwhelmed by data but unsure how to leverage it fully
* Anxious about ethical and legal implications

**5. PAIN**

User’s challenges and pain points:

* Time constraints during diagnosis
* Variability in symptoms and diagnostic complexity
* Risk of human error
* Lack of tools that combine data analysis with clinical judgment
* Need for transparency and interpretability in ML predictions

**6. GAINS**

User’s desired benefits:

* Early detection of liver cirrhosis to improve prognosis
* Support for clinical decision-making
* Reduced diagnostic workload
* Data-driven insights that supplement human expertise
* Transparent, trustworthy model outputs (e.g., SHAP values or feature importance)

**Summary:**

This empathy map can guide the design of a liver cirrhosis prediction system by ensuring it:

* **Supports**, not replaces, clinical judgment
* **Integrates** into existing clinical workflows
* Provides **interpretable and accurate** predictions
* Addresses **ethical and usability concerns**