**Project Design Phase**

**Solution Architecture**

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| Date | 27 June 2025 |
| Team ID | LTVIP2025TMID60665 |
| Project Name | Revolutionizing Liver Care : Predicting Liver Cirrhosis using Advanced Machine Learning Techniques |
| Maximum Marks | 4 Marks |

**Solution Architecture:**

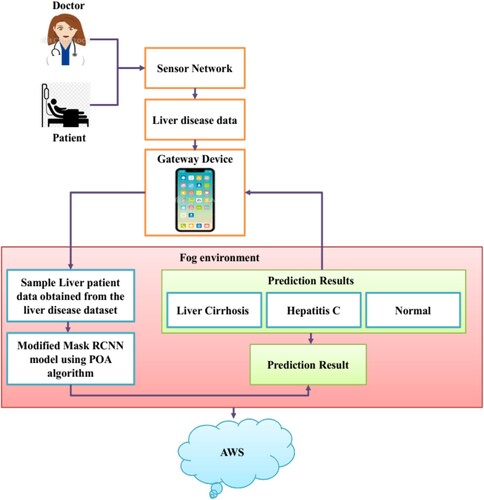
Solution architecture is a complex process – with many sub-processes – that bridges the gap between business problems and technology solutions. Its goals are to:

* Find the best tech solution to solve existing business problems.
* Describe the structure, characteristics, behavior, and other aspects of the software to project stakeholders.
* Define features, development phases, and solution requirements.
* Provide specifications according to which the solution is defined, managed, and delivered.

**Example - Solution Architecture Diagram:**

**Liver cirrhosis is a critical and irreversible condition caused by long-term liver damage, often going undetected until it reaches an advanced stage. In developing countries like India, due to a lack of regular health monitoring, awareness, and early detection facilities, patients often visit hospitals only when symptoms become severe. Traditional diagnostic methods for liver diseases are either invasive (like biopsies) or require costly imaging techniques, making them inaccessible to many. This delay in diagnosis severely affects treatment outcomes and survival rates.**

**To address this pressing healthcare challenge, our project leverages the power of Machine Learning to predict liver cirrhosis at an early stage using routine clinical data. By training predictive models on patient data like age, bilirubin levels, enzymes, and albumin levels, our system can identify patterns and classify whether a person is at risk. This predictive approach not only enables early intervention but also supports doctors with decision-making tools. The system is designed to be easily accessible through a user-friendly web interface, ensuring that even primary healthcare centers can utilize it for mass screening. This AI-based solution is cost-effective, non-invasive, and scalable, making it a vital step forward in the fight against liver cirrhosis and enhancing the overall quality of liver healthcare services.**

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