4. Project Design Phase
4.2 Proposed Solution Template

Date	28 June 2025
Team ID	LTVIP2025TMID35678
Project Name	Pattern Sense: Classifying Fabric Pattern using Deep Learning
Maximum Marks	2 Marks

Proposed Solution:

The proposed solution aims to revolutionize the way fabric patterns are classified in both textile industries and e-commerce platforms. Traditionally, fabric patterns are identified manually, which is not only time-consuming and inconsistent but also prone to human error. This problem becomes more significant in large-scale production units or when managing massive online clothing inventories.

To solve this, **Pattern Sense** uses a **Convolutional Neural Network (CNN)** to classify images of fabric patterns into categories such as striped, plain, checked, and polka-dotted. The model is trained on a labeled dataset and deployed via a user-friendly **Flask web interface**, allowing users to upload images and receive real-time predictions.

This AI-driven approach ensures faster, more accurate classification, reducing operational load and improving user experience in retail applications. Additionally, its modular architecture allows seamless integration into various industries through API or cloud deployment, making it a scalable and commercially viable solution.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Manual classification of fabric patterns in textile industries is time-consuming, error-prone, and lacks standardization. E-commerce platforms also lack automated pattern tagging.
2.	Idea / Solution description	We propose a deep learning-based solution using CNNs to automatically classify fabric images into categories like striped, checked, plain, and polka-dotted via a Flask web app.
3.	Novelty / Uniqueness	Combines real-time prediction with visual interface. It is among the first AI tools focused solely on **fabric pattern classification** for textile and retail industries.
4.	Social Impact / Customer Satisfaction	Improves productivity of textile workers, enhances accuracy, reduces visual fatigue, and provides better shopping experiences via visual-based pattern filters.
5.	Business Model (Revenue Model)	SaaS-based model for textile manufacturers; license-based APIs for e-commerce platforms to integrate pattern recognition into their backend product tagging system.

6.	Scalability of the Solution	Scalable across textile factories, fashion startups, and online shopping platforms. Can be integrated with large datasets and cloud deployment for wider access.