**Project Design Phase**

**Proposed Solution Template**

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| Date | 28 June 2025 |
| Team ID | LTVIP2025TMID46247 |
| Project Name | Classifying Fabric Patterns Using Deep Learning |
| Maximum Marks | 2 Marks |

**Proposed Solution Template:**

Project team shall fill the following information in the proposed solution template.

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| **S.No.** | **Parameter** | **Description** |
|  | Problem Statement (Problem to be solved) | Identifying and classifying different fabric types (cotton, denim, nylon, polyester, silk) from images is a manual and time-consuming task in industries like fashion, textiles, and e-commerce. Automating this process using computer vision can save time and reduce human error. |
|  | Idea / Solution description | The project proposes a deep learning solution using Convolutional Neural Networks (CNNs) trained on a dataset of fabric images. The model is integrated into a Streamlit-based web interface that allows users to upload images and receive real-time fabric classification results. |
|  | Novelty / Uniqueness | While image classification models are common, this project uniquely targets fabric pattern recognition using a lightweight architecture suitable for real-time use. It includes data augmentation, live demo via Streamlit, and can be deployed for industrial or educational applications. |
|  | Social Impact / Customer Satisfaction | The solution benefits industries by improving efficiency and reducing costs in quality control, inventory management, and online retail. It also supports visually impaired users in identifying fabric types. Educational institutions can use it as a learning tool for AI in textiles. |
|  | Business Model (Revenue Model) | The model can be offered as a subscription-based API to fabric suppliers and garment manufacturers. It could also be integrated into mobile apps for consumers or sold as a white-label SaaS product to e-commerce platforms for automated tagging and filtering. |
|  | Scalability of the Solution | The solution can be scaled by training on larger, more diverse datasets and deployed to cloud platforms like AWS or Streamlit Cloud. It can also be extended to classify patterns, colors, or defects in fabrics and integrated with existing textile ERP systems. |