Project Design Phase Proposed Solution Template

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| Date | 26 June 2025 |
| Team ID | LTVIP2025TMID45878 |
| Project Name | Pattern sense: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** |
| 1. | Problem Statement (Problem to be solved) | Manual fabric pattern classification is  time-consuming, inconsistent, and error-prone. Existing automated systems fail to accurately recognize traditional and diverse pattern types, causing delays in production and quality checks. |
| 2. | Idea / Solution description | Our solution is a deep learning-based image classification system that automatically detects and classifies various fabric patterns with high accuracy. The model uses convolutional neural networks (CNNs), trained on a diverse dataset of fabric images, and provides real-time  feedback with confidence scores. |
| 3. | Novelty / Uniqueness | The system integrates both modern and traditional pattern recognition. It includes confidence scoring, support for multiple uploads, and feedback loops to improve model accuracy continuously. |
| 4. | Social Impact / Customer Satisfaction | This solution reduces manual labor, increases efficiency in textile manufacturing, and ensures quality consistency. Designers and quality control teams benefit from time savings and  improved reliability. |
| 5. | Business Model (Revenue Model) | The system can be offered as a SaaS product to textile companies with subscription-based pricing. A freemium model could include basic classification, while premium plans offer advanced analytics and customization. |
| 6. | Scalability of the Solution | The model can scale to accommodate more pattern types and adapt to new datasets over time. It can also be deployed in other domains like fashion tech, e-commerce fabric filters, or even mobile applications for on-the-go fabric  recognition. |