

Project Design Phase
Problem – Solution Fit Template

Date	22 June2025
Team ID	LTVIP2025TMID37802
Project Name	pattern sense: classifying fabric patterns using deep learning
Maximum Marks	2 Marks

Problem–Solution Fit for Pattern Sense

Problem

Fashion designers, textile manufacturers, and quality control teams face major challenges when trying to identify and classify fabric patterns accurately and consistently. Manual inspection is slow, subjective, and error-prone, often requiring expert knowledge and resulting in high operational costs. Traditional computer vision methods struggle with the complexity and variation in fabric textures and patterns. As a result, businesses experience quality issues, production delays, and increased waste.

Solution

This project delivers a deep learning-based fabric pattern classification system designed to automate and standardize the identification of textile patterns. Using advanced AI models, Pattern Sense can accurately classify complex designs, enabling faster quality checks, better inventory management, and more reliable production workflows. This empowers fashion and textile businesses to improve efficiency, reduce costs, and ensure consistent product quality at scale.

Template:

1. CUSTOMER SEGMENT(S) <ul style="list-style-type: none"> Textile manufacturers Fashion brands Quality control departments Textile design studios 	5. AVAILABLE SOLUTIONS <ul style="list-style-type: none"> Manual pattern inspection by experts Traditional computer vision systems (limited flexibility) Basic automated inspection tools using rule-based approaches 	6. CUSTOMER CONSTRAINTS <ul style="list-style-type: none"> Limited technical expertise in AI Budget constraints for new technology Resistance to process changes from traditional staff Need for integration with existing production lines
2. JOBS, TO-BE-DONE / PROBLEMS <ul style="list-style-type: none"> Accurately identify and classify fabric patterns during production Automate quality checks to reduce human error Speed up inspection processes Ensure consistent pattern recognition for brand identity 	9. PROBLEM ROOT CAUSE <p>Frustrated with manual inspection errors Worried about brand reputation Anxious about production delays and high costs</p> <p>After Confident in fabric quality Relieved with faster, more reliable inspections</p>	3. CHANNELS OF BEHAVIOUR <ul style="list-style-type: none"> Researching AI-based inspection solutions Attending online webinars or industry conferences Viewing demonstration videos or reading case studies
3. TRIGGERS <ul style="list-style-type: none"> Increasing demand for high-quality, consistent fabrics Rising labor costs and shortage in skilled quality inspectors Need for reduce product recalls (defects) <p>Before: Confident in fabric quality After: Proud of adopting innovative technology.</p>	9. PROBLEM ROOT CAUSE <p>Complex, highly variable fabric patterns are difficult for traditional systems to analyze Manual inspection depends on up-reliable staff and inconsistent accuracy Proud of adopting innovative technology</p> <p>Before: Confident in fabric quality After: Proud of adopting innovative technology.</p>	10. YOUR SOLUTION <p>PatternSense: A deep learning based fabric pattern classification system that automates and standardize pattern recognition</p> <ul style="list-style-type: none"> High accuracy in complex pattern classification Real time quality checks integrated into production Scalable and adaptable to new patterns