Project Design Phase
Problem – Solution Fit Template

Date	22 June2025
Team ID	LTVIP2025TMID35513
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)

- Textile manufacturers
- Fashion brands
- Quality control departments
- Textile design studios

5. AVAILABLE SOLUTIONS

- Manual pattern inspection by experts
- Traditional compoter vision systems (limited flexibility)
- Basic automated inspecction tools using rule-based approaches

6. CUSTOMER CONSTRAINTS

- Limited technical expertise in Al
- Budget constraints for new fechniogly
- Resistance to process changes from ciril-ditional staff
- Need for integation with existing production lines

2. JORS,TO-BE-BONE / PROBLEMS

- Accurately identify and classify fabric pattems during production
- Automate quality checks to reduce human error

  Speed up instpection processes
- Ensure consistent pattern recogrvition for brand identity

9. PROBLEM ROOT CAUSE

Frustrated with manual inspection errors

Worried about brand reputation

Anxious about production delays d high costs

After

Confident in fabric quality

Relieved with faster, more relable inspections

3. CHANNELG OF BEHAVIOUR

- Researching Al-based inspection solutions
- Aftending online webinars or industry conterences
- Viewing demotsation videos or reading case studies

3. TRIGGERS

- Increasing demand for high-quality. consistent tabrics
- Rising labor costs and nnvrtage in skilled quality inspectors
- Need for reduce product recolls (ardefects

  Mfer. Confident in tabricquality

  After: Prod of adopting innovative.cinegy.

9. PROBLEM ROOT CAUSE

Complex. highly variable tabric patterns are difficult for traditional systems to malyze

Manual inspection depensen on up-rellavable sartitzencfnconsistent sacent

Proud of adopting innovative technology

Rierr: Confident in facelq

10. YOUR SOLUTION

PatternSense: A deep learning based fabric pattern classification system that automates and standardize pattern recog nition

- High accuracy in complex pattern classification
- Real time quailty checks integrated into production
- Scalable and adaptable to new patterns