

## Pattern Sense – Project Design Phase-II

### *Technology Stack (Architecture & Stack)*

**Date** 31 January 3035

**Team ID** LTVIP2025TMID41819

**Project Name** Pattern Sense: Classifying Fabric Patterns Using Deep Learning

**Max Marks** 4 Marks

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### Technical Architecture

The deliverable shall include the architectural diagram and the details as per the tables below.

**Example Reference:** Order processing during pandemics (offline mode)

**Source:** [IBM Developer Architecture Pattern](#)

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Table-1: Components & Technologies

S.N	Component Description	Technology
1	User Interface – How users interact with the app	HTML, CSS, JavaScript, React JS, Flutter
2	Application Logic-1 – Core processing logic	Python (Flask / Django)
3	Application Logic-2 – Image classification	CNN-based Deep Learning Model (TensorFlow / Keras)
4	Application Logic-3 – Post-processing / Visualization	Matplotlib / Chart.js
5	Database – Data Types & Configurations	MySQL / SQLite
6	Cloud Database – Remote data storage	Firebase, AWS RDS
7	File Storage – Image storage	AWS S3 / IBM Cloud Object Storage / Local Filesystem
8	External API-1 – OTP / Email service	Twilio / SendGrid / SMTP
9	External API-2 – Reference Fabric API	OpenFabric API / Custom ML APIs
10	Machine Learning Model – Fabric classification	CNN Image Classification Model
11	Infrastructure – Deployment	Local Server, Heroku, AWS EC2,

S.No	Component Description	Technology
	environment	Kubernetes, Google Cloud Run

Table-2: Application Characteristics

S.No	Characteristics	Description	Technology
1	Open-Source Frameworks	Frameworks and libraries used in app development	React, Flask, TensorFlow, Keras
2	Security Implementations	Authentication, access control, encryption, secure APIs	SHA-256, JWT, HTTPS, Firebase Auth
3	Scalable Architecture	Modular microservices, elastic deployment for scaling	Docker, Kubernetes, AWS Lambda
4	Availability	Ensures system uptime and failure resistance	Load Balancer, Multi-Zone Cloud Infra
5	Performance	Fast image upload & prediction, use of cache, CDN for static content	Redis, Cloudflare CDN, Asynchronous APIs

## References

- <https://c4model.com/>
- <https://developer.ibm.com/patterns/online-order-processing-system-during-pandemic/>
- <https://www.ibm.com/cloud/architecture>
- <https://aws.amazon.com/architecture>
- <https://medium.com/the-internal-startup/how-to-draw-useful-technical-architecture-diagrams-2d20c9fda90d>

Would you like to now add a **visual diagram** to support this architecture or continue with the **testing strategy** or **deployment plan**?