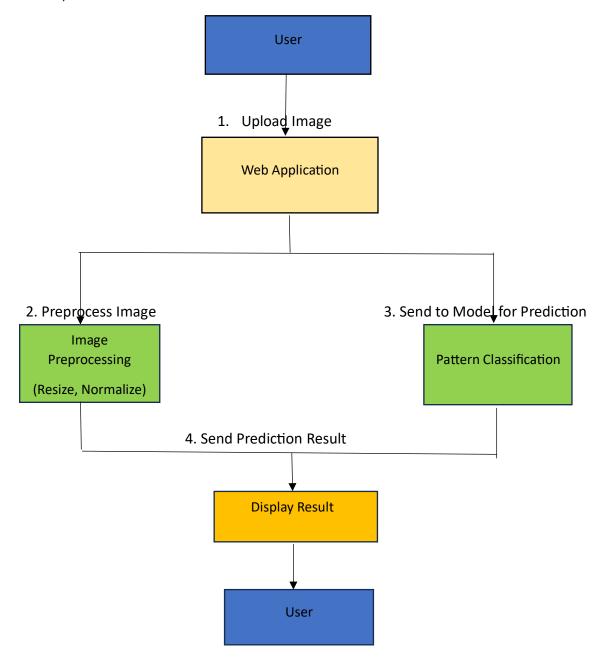
# 3. Requirement Analysis

### 3.3 Data Flow Diagram & User Stories

Date	28 June 2025		
Team ID	LTVIP2025TMID35678		
Project Name	Pattern Sense: Classifying Fabric Patterns		
	using Deep Learning		
Maximum Marks	4 Marks		

#### **Data Flow Diagram:**

A Data Flow Diagram (DFD) is a traditional visual representation of the information flows within a system. A neat and clear DFD can depict the right amount of the system requirement graphically. It shows how data enters and leaves the system, what changes the information, and where data is stored.



## **Explanation of the Flow:**

- 1. **User uploads an image** to the system via a user-friendly interface.
- 2. The **Web Application** receives the image and sends it to the **Image Preprocessor**.
- 3. The preprocessed image is then passed to the **Pattern Classification Model**.
- 4. The model returns the **predicted fabric pattern** (e.g., "Polka-Dotted") and confidence level.
- 5. The result is **displayed back to the user** via the frontend UI.

### **DFD** Components for Pattern Sense

#### □ 1. Processes

These represent activities or functions that transform data within the system.

Process ID	Process Name	Description		
P1	Image Upload & Input Handling	Accepts image files from users (mobile/web) and validates them		
P2	Image Preprocessing	Resizes, normalizes, and prepares the image for classification		
P3	Pattern Classification	Uses the trained CNN model to predict the fabric pattern		
P4	Result Display & Feedback	Shows the predicted label and confidence score to the user; accepts feedback		

### 2. Data Stores

These represent where the system data is stored either temporarily or permanently.

Data Store ID	Data Store Name	ata Store Name Description		
D1	Image Dataset	Stores uploaded images for future		
	illage Dataset	training, testing, or audit logs		
D2		Stores trained CNN model		
	Model Data	(model_cnn.h5) used for real-time		
		predictions		
D3	Prediction Logs	Stores history of predictions and		
	Frediction Logs	user interactions (optional)		
D4		Stores user feedback and ratings		
	Feedback Repository	(optional, for model		
		improvement)		

#### ☐ 3. Model (in the context of DFD)

Component	Name	Role in the System		
M1	Convolutional Noural Nativork	The trained deep learning model		
	Convolutional Neural Network (CNN) Model	(model_cnn.h5) that classifies		
	(CIVIV) IVIOUEI	fabric patterns		

- The CNN model is stored in D2: Model Data.
- It's invoked by **P3: Pattern Classification** to classify images.
- It outputs labels such as "Striped", "Polka-Dotted", "Plain", etc.

# **□** User Stories

• **User stories** are short, simple descriptions of features told from the perspective of the user. They help bridge the gap between user needs and system functionality. For the *Pattern Sense* project, user stories were written based on expected interactions with the system by different types of users.

User Type	Functional Requirement (Epic)	User Story Number	User Story / Task	Acceptance Criteria	Priority	Release
Customer (Mobile user)	Image Upload	USN-1	As a user, I want to upload a fabric image from my mobile device	Image is uploaded and preview is shown	High	Sprint-1
Customer (Mobile user)	Classification	USN-2	As a user, I want the app to analyze the image and detect the pattern	Pattern is correctly displayed with label and confidence	High	Sprint-1
Customer (Mobile user)	Retry / Feedback	USN-3	As a user, I want to upload another image or give feedback on the result	Option to retry and rate the output is available	Medium	Sprint-2
Customer (Web user)	Image Upload	USN-4	As a web user, I want to drag and drop images directly into the browser	Image drop zone works as expected	High	Sprint-2
Customer Care Executive	Monitoring	USN-5	As support, I want to view logs of user activity to ensure predictions are working	Admin panel displays recent uploads and logs	Medium	Sprint-2
Administrator	Model Updates	USN-6	As an admin, I want to upload new model files to improve accuracy	Model updates take effect without breaking old flow	Low	Sprint-2