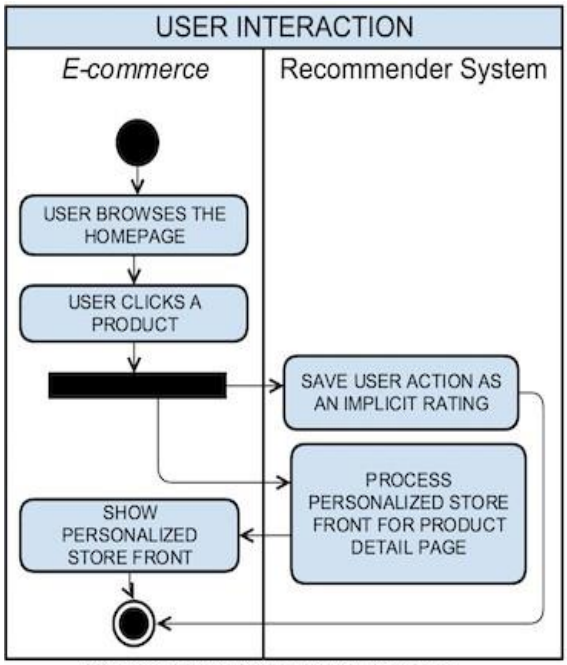
SOLUTION ARCHITECTURE

DATE	10 October 2022
TEAM ID	PNT2022TMID14283
PROJECT NAME	SmartFashionRecommenderApplication
MAXIMUM MARKS	4 Marks

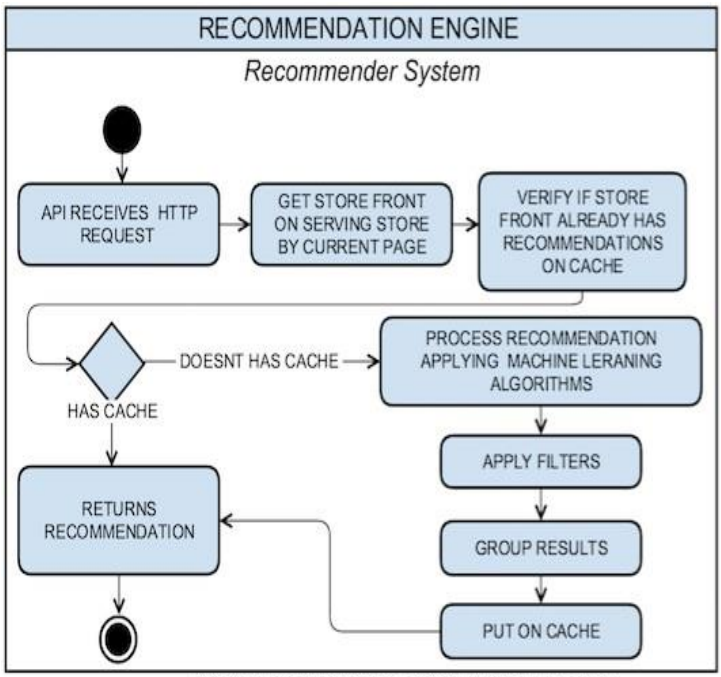
ARCHITECTURE DIAGRAM :-

☺ User Interaction Activity Diagram:



(a) User Interaction Activity Diagram

☺ Recommendation Engine Activity Diagram:



(b) Recommendaiton Engine Activity Diagram

The proposed system is divided into Four parts:

- Image pre-processing
- Recommendation Engine
- Web Scraping
- Web App

Image pre-processing: Image processing is the process of using computer algorithms to perform manipulations on digital images. The main goal of image processing is to refine the image data by removing the distorted noise and by enhancing image pixels. An image is nothing more than a two- dimensional array of number between 0 and 255. It is defined by the mathematical function f(x,y) where x and y are the two co-ordinates horizontally and vertically. The value of f(x,y) at any point is giving the pixel value at that point of an image.

The steps to pre-process the image are as follows:

- **Read image:** I
- **Resize image:**
- **Segmentation:**
- **Flatten:**

Recommendation Engine:

A recommendation engine filters the information using different algorithms and recommends the relevant items to users. It first captures thepast behaviour of a customer and recommends products which the users might be likely to buy. The working of recommendation engine is as follows:

- **Collection of Data**
- **Analyzing the Data**
- **Filtering the Data**

Web Scraping:

Web scraping is the process of automating the process of data extraction in a fast and efficient manner.It implements the use of crawlers or robots that automaticallyscan specific pages on a website and extract the required information. For the extraction of product data on a large scale, we implement a piece of code (called a 'web scraper') that requests a particular product page on an e-commerce website. In return, the website replies with the requested web page. Once the page is received, the scraper will parse its HTML code and extract relevant data from it. When the data extraction process is completed, the tool finally converts the data into the desired format. Now, since the web scraper is anautomated program, it can repeat this process thousands of times on a large number of product pages, and across several e-commerce websites.

Web App

Front End Design: Vue.js framework is used to create ainteractive interface for the web app.
Back End Design: Flask framework is used to create aRESTful API.