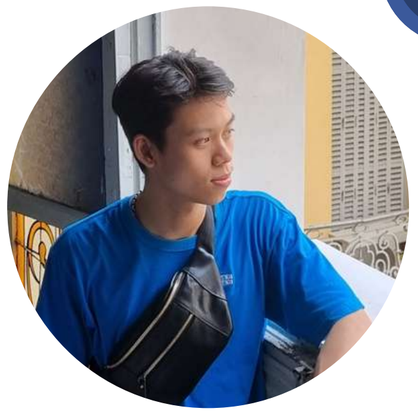
Vietnam Datathon 2023

TEAM 15

FLEXILINK

AI auto GAR (generated-and-response) using CVS(computer vision system)

About Our Members



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I. Introduction

The proposed Minimum Viable Product (MVP) aims to address the intricate challenges in the combination of computer vision and machine learning within the domain of technology. Using OpenCV, Tensorflow for precise gesture recognition and Pandas , the application deciphers user-specific hand gestures in video datasets, attributing corresponding fashion items with each recognized interaction. Simultaneously, the system integrates image recognition functionality, allowing users to capture and share images of their preferred footwear, thereby constructing a repository of user preferences. This user-generated content is shared within a community group, fostering social engagement and collaborative interactions based on common fashion interests.

The overarching goal is to establish a personalized user experience by tailoring recommendations through the amalgamation of gesture-based insights and individual preferences. Furthermore, the MVP incorporates mechanisms for users to evaluate purchased products, providing valuable feedback within the community for iterative development and continuous enhancement of gesture recognition precision and overall system performance.

II. Problem Statement

The problem addressed by the proposed MVP revolves around the complexity of seamlessly integrating user gestures, preferences, and social interactions within the realm of fashion technology. The challenge lies in accurately interpreting specific hand gestures from video datasets through the amalgamation of OpenCV for gesture recognition and TensorFlow for machine learning.

The inefficiencies stem from a lack of cohesive systems that comprehensively capture both user actions and preferences in real-time. The current landscape reveals a gap in the market, as existing solutions primarily focus on either gesture recognition or social interactions, without a comprehensive integration. Competitors, if any, often lack the nuanced approach of combining gesture analysis and user-generated content sharing within a fashion-centric community. This underlines the opportunity for the MVP to pioneer a novel solution that addresses these pain points, offering users a more comprehensive online shopping experience.

III. Solution Overview

The AI-based solution proposed in the MVP harnesses the power of computer vision and machine learning to revolutionize the user experience in the fashion technology domain. Employing OpenCV for precise gesture recognition and TensorFlow for advanced machine learning, the system analyzes user-specific hand gestures within video datasets. This innovative approach not only interprets gestures but also associates recognized interactions with relevant fashion items, allowing for a dynamic and interactive user experience.

The uniqueness of this solution lies in its comprehensive integration of gesture analysis and image recognition, enabling users to capture and share images of their favorite footwear within a community group. This user-generated content, combined with the real-time analysis of gestures, positions the MVP as a groundbreaking platform, differentiating itself by providing a comprehensive, personalized, and socially engaging environment for same field enthusiasts. In essence, the solution's novelty lies in its ability to seamlessly merge cutting-edge AI techniques to address both technical challenges and fulfill user-centric business needs in the fashion tech landscape.

METHODOLOGIES

01
Collect data

02
Data processing

03
Probability assessment model

04
Chat box

1/ Collect data

. Use data will be used from 2 sources: the shop's cameras and consumer purchase data

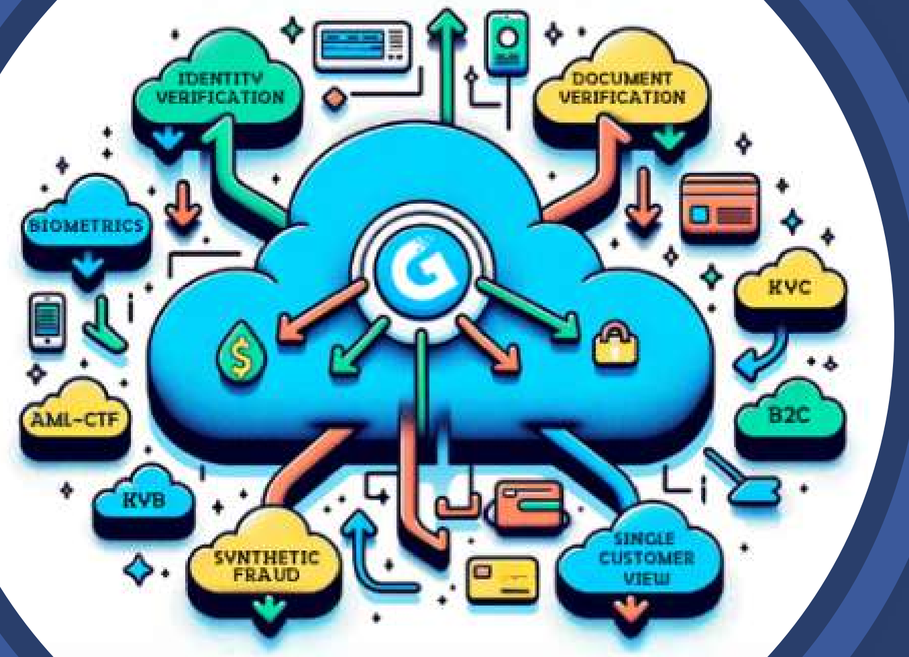
2/ Data processing

. Build a data table with 7 indices: gender, brand, color, size, product type, style, customer height.

. Videos will be converted into data in the form of a sequence of images. Use Python tools to process and classify these images into 5 actions: reaching, retracting, extending time on the shelf, checking products, and checking the shelf to evaluate and classify target products based on behavioral psychology regarding the attractiveness of the product. Then, this evaluated data is added to the general data table.

. Consumer data will be directly input into the purchase data table.

. Use pandas to clean and process the data, handling missing or invalid values.



3/Probability assessment model

. Use pandas to filter and evaluate the product's hotness based on the number of purchases according to user requirements for the model using standard probability (event/space sample).

. Use linear regression on customer height and size data to suggest appropriate sizes for customers.

Finally, build a chatbot for users to find recommendations through the algorithmic models mentioned above.

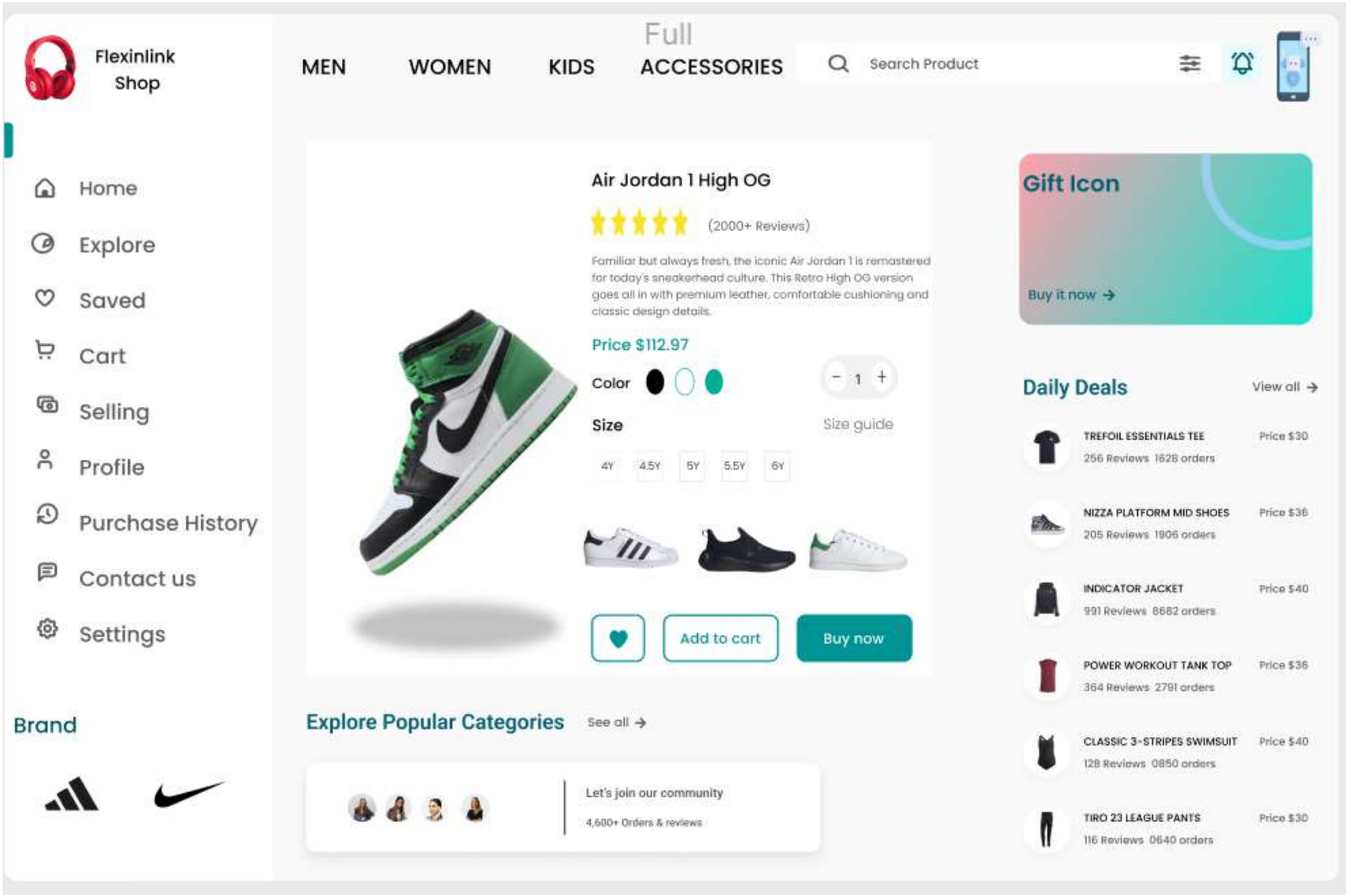
4/ Method use

. For video data, the majority will be processed using the OpenCV, Tensorflow library to convert it into images and process on those images. Behavior will be classified based on time, and customer height will be predicted using an algorithm to estimate the depth of the image.

. The remaining steps will largely use pandas for tabular data processing and matplotlib for probability processing and visualization of the linear regression algorithm.

CORE FUNCTIONALITY

Social Media Marketing



Key features

AI Chat Box

Social Network

PERFORMANCE METRIC

KEY TO SUCCESS

RECOGNITION RATE

High accuracy recognition rates when customers interact with computer vision systems are an important indicator that assesses product quality.

SAVE ON PERSONNEL COST

Reducing the human resources to communicate with customers on basic requirements will be an important factor in properly distributing and adjusting work, helping to increase efficiency in responding to and meeting strict requirements from customers.

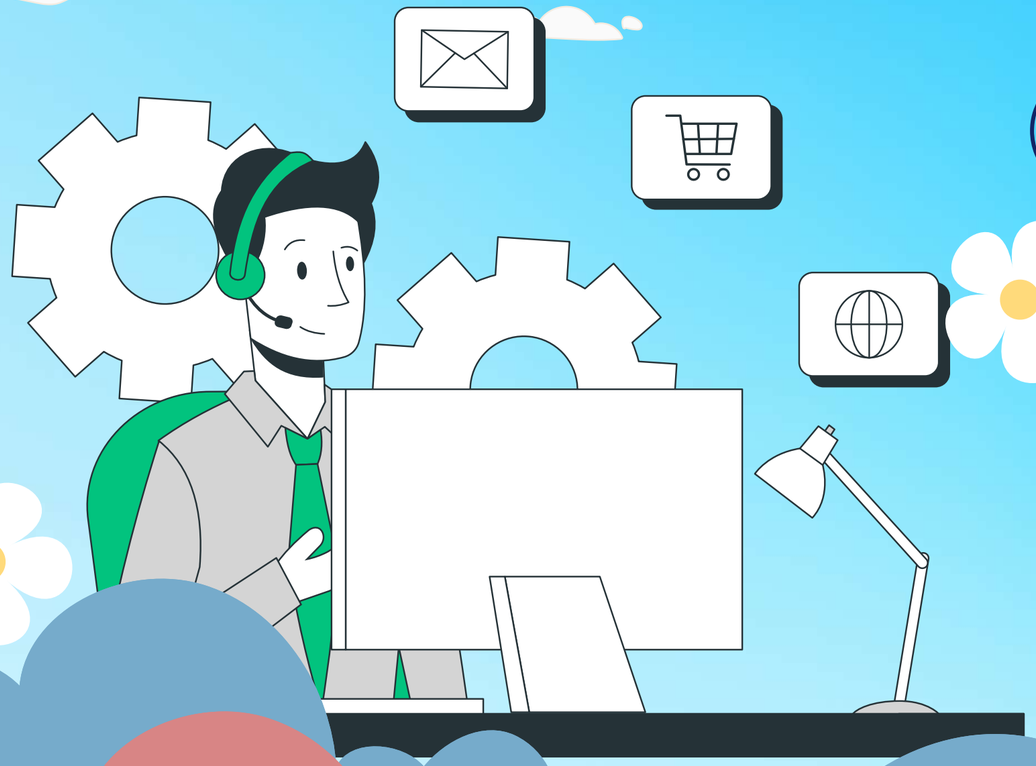
RESPONSE TIME

Assess the time the system analyzes and responds to customers based on information, preferences, behavior, and integrates the ability to store search history to give information that is right to the requirements and in accordance with the wishes of customers.

Quick response helps to increase customer experience, thereby supporting market research.

RESPONSE AND EVALUATION RATE

Through running MVP model testing to gather customer feedback and reviews. From there, compare the number of positive feedback received based on the number of customers participating in the experience. An increase in the number of users, a high positive response rate will be a measure of the level of interest in the market, the level of satisfaction and product quality.



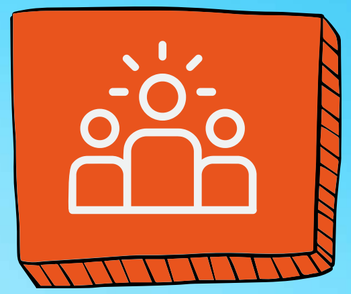
CUSTOMER RETURN RATE

The fact that a customer is carefully considered will help the level of access to the product is increased through the acquisition and introduction to relatives and friends. Reusable factors contribute to increased customer satisfaction for the product.

CUSTOMER CHURN RATE

The percentage of customers who stop using the product for a certain period of time or completely after the MVP model testing phase plays an important role in defining goals and actions, which are agents that reshape how the product works and organizes.

TIMELINE

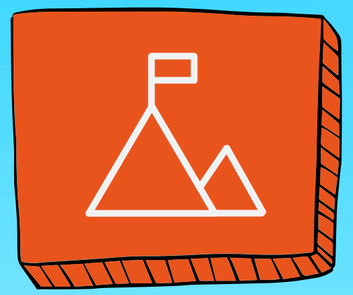


Online Round Submission

- Analyze dataset
- Brainstorming idea
- Prepare member's CV and presentation slide showing our MVP's model

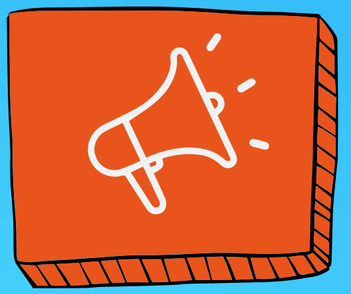
Workshop & Training

Get to know about rules, agenda and regulations about DATATHON DAYS



Work with Mentors

- Have a meeting with our mentors so we can get to know each other
- Setup plan until DATATHON DAYS



Code & prepare presentation

- Implement code for MVP's model with mentor's guidance
- Prepare presentation slides

TIMELINE

Elimination Round

Present to mentors to keep going with 5 teams

Final round

Present to judges

Score consolidation

- Judges to define team scores
- Social media voting

Award ceremony

Announce the winners

LIMITATIONS

Recommendations can only be made for products with available data. If a product becomes less popular tomorrow, and a new trend emerges, customers may want to purchase those new products, and we won't have data to analyze for those customers.

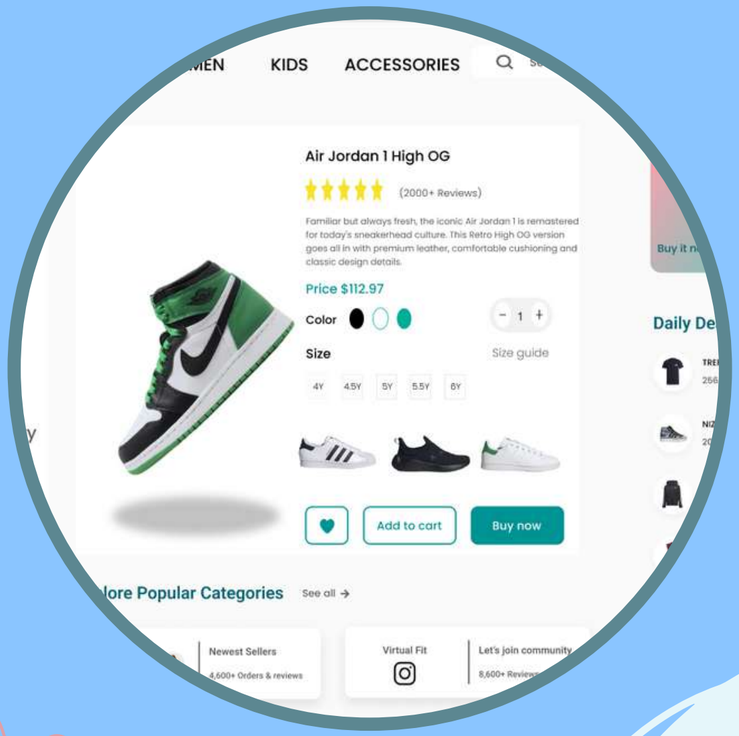
Secondly, relying solely on AI data does not provide insights into the preferences and psychological aspects of customers. We won't know customers' preferences, buying needs, who they are buying for, favorite colors, and so on.

POTENTIALS

- One potential improvement is to extend the linear regression model to multivariate analysis, incorporating more features to provide more accurate recommendations for customers' preferred items.
- Additionally, exploring and developing features that consider customer preferences, such as integrating collaborative filtering techniques or incorporating user feedback into the model, could enhance the system's ability to understand and respond to customer preferences more effectively.

SUMMARY OF MVP

- The proposed MVP combines computer vision and machine learning, leveraging OpenCV for accurate gesture recognition and Pandas for analyzing user-specific hand gestures in video datasets. The system also includes image recognition for users to capture and share images of their preferred footwear, creating a repository of user preferences.
- Additionally, the MVP allows users to evaluate and share purchased products, providing valuable feedback within the community for continuous improvement in gesture recognition precision and overall system performance.



Ai in MVP

1. Accurate Gesture Recognition
2. Personalized Recommendations
3. Community Engagement
4. Adaptive Learning
5. Efficient Data Analysis
6. Iterative Development


Thank You