

AMAZON SMBHAV 2024

TEAM DETAILS:

SHIFT HAPPENS

Team Members:

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Anish Setya

Saptashwa Mandal



THEME DETAILS:

THEME NAME:

THEME 1 -- CREATE AN AMAZON PRODUCT LISTING USING SOCIAL MEDIA CONTENT

THEME BENEFITS

- **Enhanced Customer Experience:** Optimises the buying decision in the social media followers for better satisfaction levels of the customers
 - **Increased Sales and Revenue:** Utilises social media influencer marketing as the primary strategy to promote products and make profits.
 - **Efficient Product Launch:** Rapid and efficient production facilitation to hit the market harder.
 - **Data-Driven Insights:** Success after success enables them to gather important information from the social media interactions that could improve future products and marketing strategies.
 - **Reduced Operational Costs:** Cutting the time and number of employees required to build or upload product listings.
 - **Improved Brand Awareness:** Implements social media in order to extend coverage and public recognition of the brand.
 - **Competitive Advantage:** It helps the firm achieve competitive advantage through the provision of information that can help the firm to adjust within the market and with consumers.
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IDEA AND APPROACH DETAILS

Our solution utilises the bench strength of artificial intelligence as well as machine learning to easily transform social media content into detailed as well as elaborate product descriptions on Amazon. In the case of textual, image, and video analysis, our system is able to pull out product details to create richer descriptions for each product, and to discard the posts that are not a product.

SOLUTION OVERVIEW

- **Social Media Content Analysis:** Automatically sources the social media platforms containing information appropriate for the targeted product and posts.
 - **AI-Driven Product Information Extraction:** we applied machine learning algorithms to read product information such as product title, description, price, and features
 - **Image and Video Analysis:** Extracts product attributes from the image and produces high-quality images from the information analysed. Amazon Listing
 - **Optimisation:** Creates more relevant and strengthened product titles, descriptions, and keyword to enhance search engine status.
 - **User-Friendly Interface:** A clear interface where it features a dashboard for social media influencers to list down their products.
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TECHNICAL STACK

BACKEND	FRONTEND	AI/ML
<ul style="list-style-type: none">• Python: Versatile programming language for backend development and AI/ML tasks.	<ul style="list-style-type: none">• React: Popular frontend framework for creating interactive and user-friendly interfaces.	<ul style="list-style-type: none">• TensorFlow/PyTorch: Powerful deep learning frameworks for image and text analysis.
<ul style="list-style-type: none">• Flask: Lightweight framework for building efficient web APIs.	<ul style="list-style-type: none">• HTML/CSS: for styling	<ul style="list-style-type: none">• OpenCV: Library for computer vision tasks like object detection and image processing.
<ul style="list-style-type: none">• Docker: To containerise our software	<ul style="list-style-type: none">• Payment Gateway (Mock), HomePage and Shopping Cart	<ul style="list-style-type: none">• Transformers: Advanced NLP models for text understanding and generation.
		<ul style="list-style-type: none">• Hugging Face: Platform for accessing and utilizing pre-trained AI models.

DECISION RATIONALE

Our technology choices were influenced by the following factors:

ASSUMPTIONS:

Consumers will remain to depend on social media sites for information about the products and market them. AI and machine learning technologies should also progress further than they are today, as a result of this, content analysis should become more accurate and efficient. The related collection of APIs will remain constant to be workable for the creation, as well as for management of the listings of products.

CONSTRAINTS:

There will be a need to constantly work with huge volumes of data coming from social media. The models AI must be correct and fast in order to provide accurate information and reduce mistakes. The system must also be easily expandable as the user base, as well as usage, increase in the future.

KEY DECISIONS:

- **AI/ML Framework:** TensorFlow and PyTorch were selected because they are widely used deep learning frameworks, they are versatile and have large community support.
 - **Cloud Platform:** AWS was chosen because of its stable infrastructure and cloud service, a capability for AI/ML services.
 - **Frontend Framework:** React was preferred because of the modularity of the library that helped it in rendering fast and the availability of a large developer base.
 - **Backend Framework:** Flask was chosen because of its simplicity and easy use.
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FEASIBILITY AND USER-FRIENDLINESS

Our solution is highly feasible and user-friendly due to the following factors:

- **Leverage of Existing Technologies:** The key technologies employed in our solution are standard or state of the art, which decreases our risk of failure and increases performance.
- **Scalability:** The system is designed for cloud services, which enable expansion in cases of elevated user traffic and the growth of the amount of data.
- **User-Centric Design:** The program is user friendly and easy to use, even the operating interface does not necessitate proficiency on the part of the user.
- **Automated Workflows:** The automated processes help to reduce greatly the amount of time and work needed to make and maintain product listings.
- **Continuous Improvement:** This solution is expected to be fine tuned through the information collected from the users and the steady evolution in the fields of AI/ML.

SUCCESS METRICS

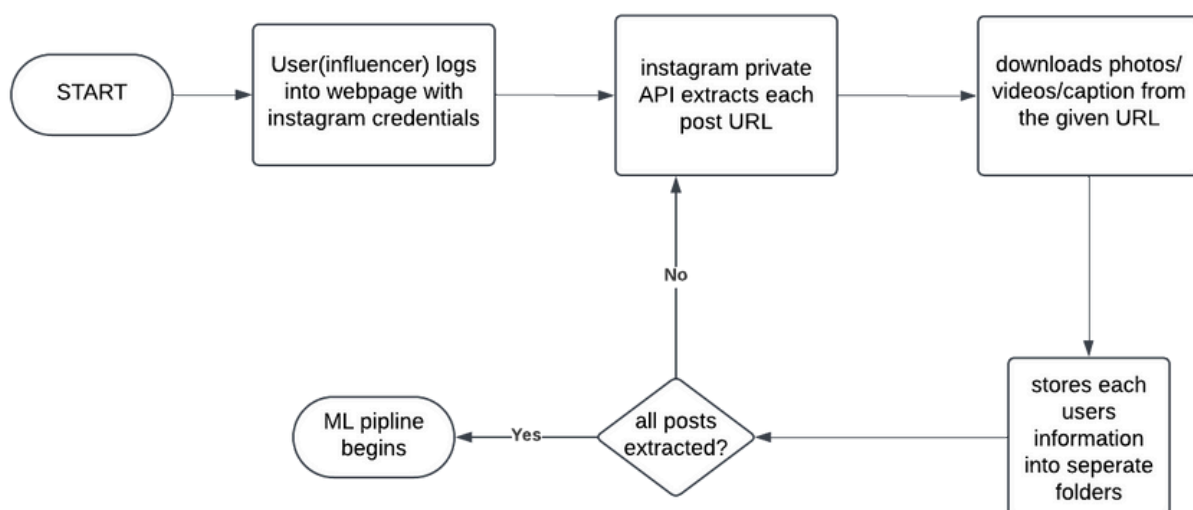
To measure the success of our solution, we will track the following metrics:

- **Number of products listed:** The total number of products that were able to be sold and placed on Amazon through our platform.
 - **Conversion rate:** The number of customers who manage to sell a product after having registered and created a list for it.
 - **User satisfaction:** The survey results such as consumers' satisfaction and rating of the presented platform's functionality
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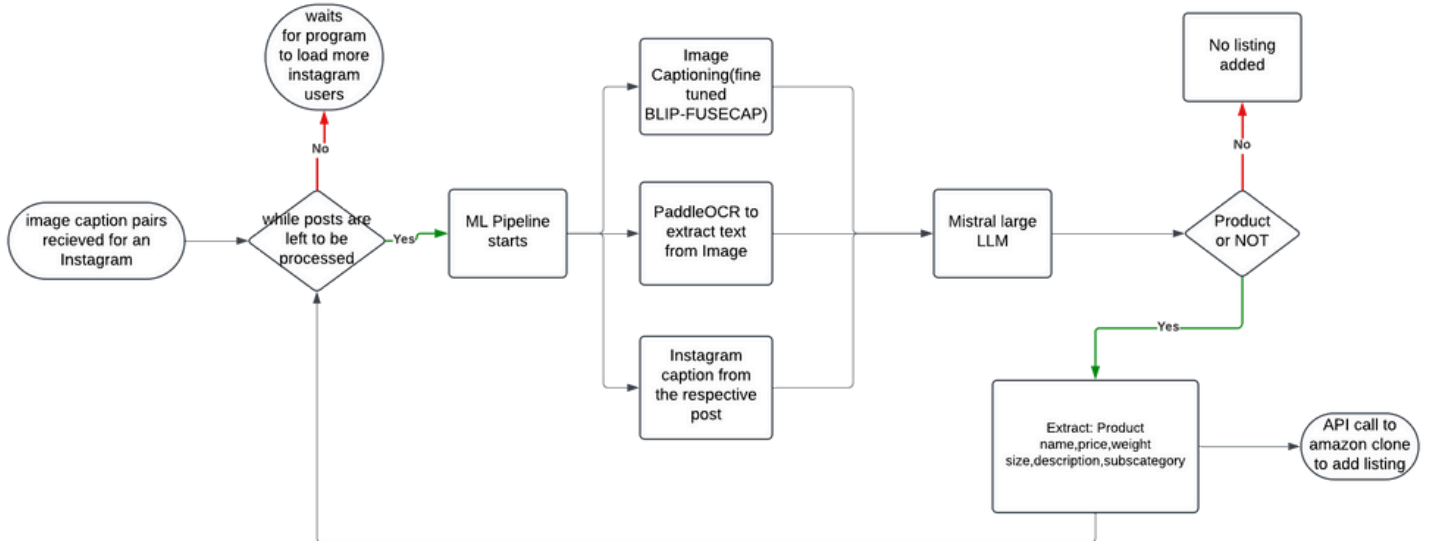
- **Product ranking:** The reputation of products listed with the aid of our platform reflected from the mean search ranking obtained.
- **Time to market:** The time taken to list the product on a new Amazon store from the time a post was created on social media.
- **Cost savings:** The decrease in the amount of expenditure, which social media influencers and businesses incur while operating their accounts.

METHODOLOGY & ARCHITECTURE DIAGRAM - OVERVIEW OF THE 3 COMPONENTS

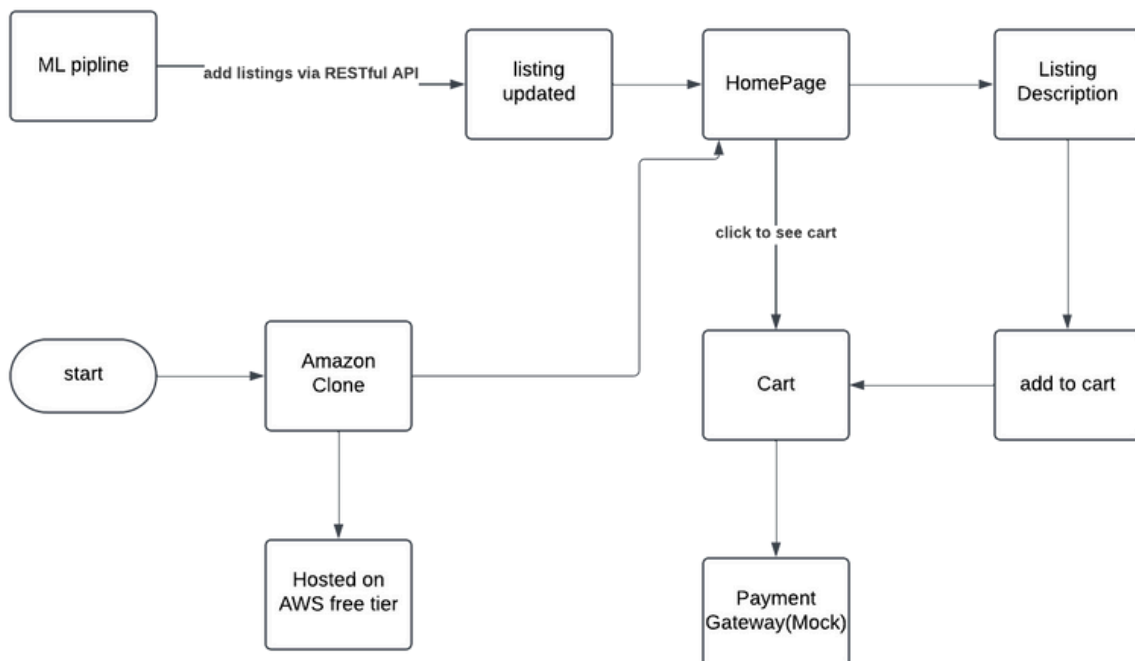
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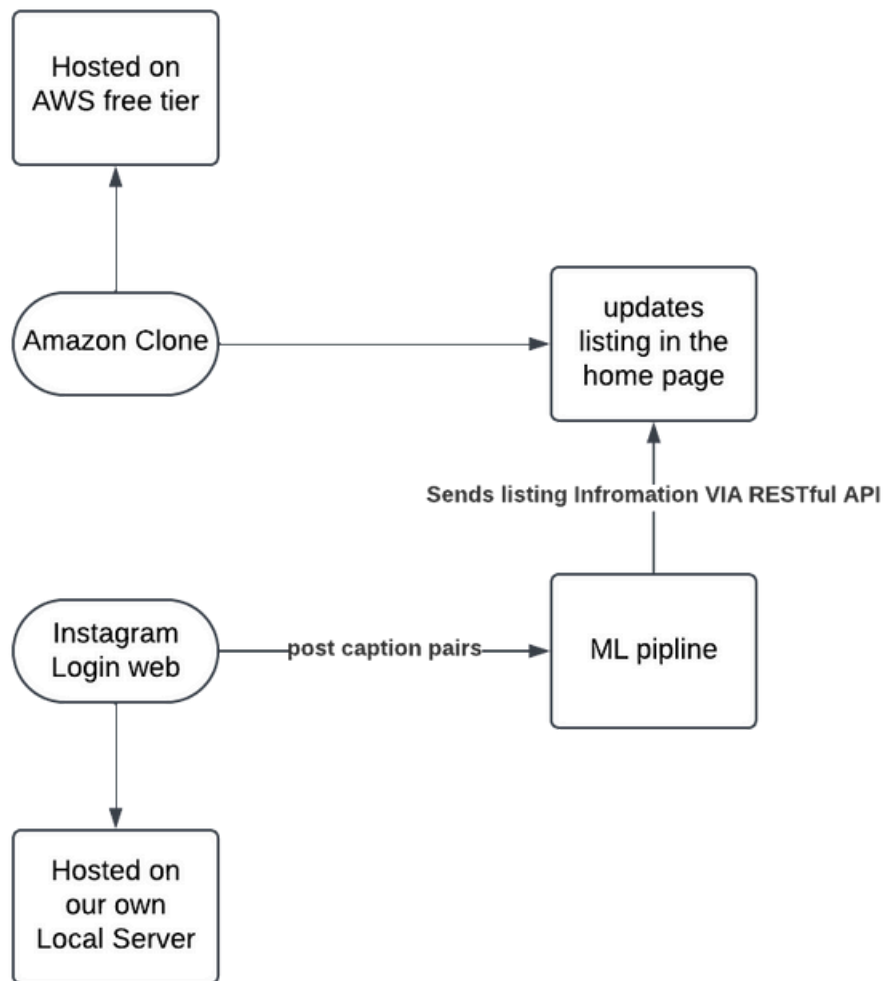
ML PIPELINE:



AMAZON CLONE:



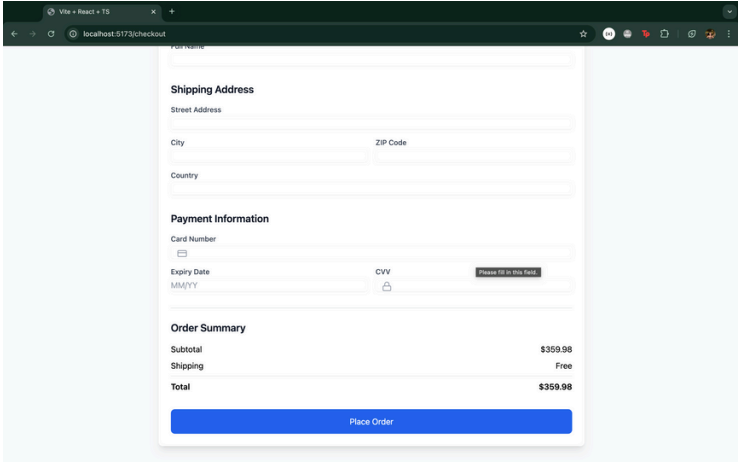
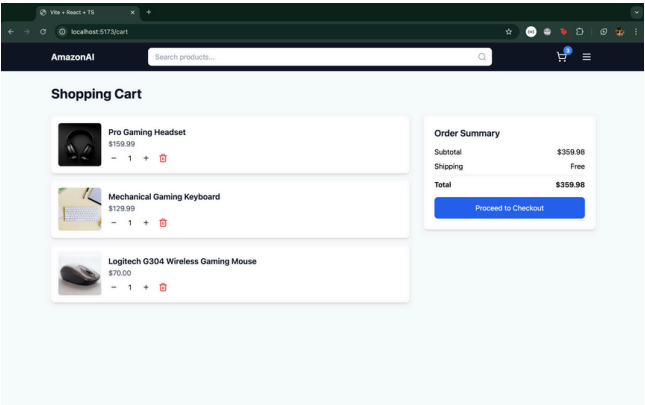
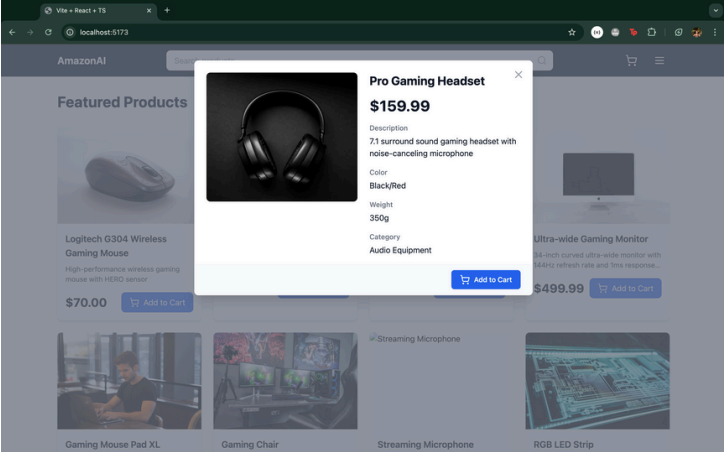
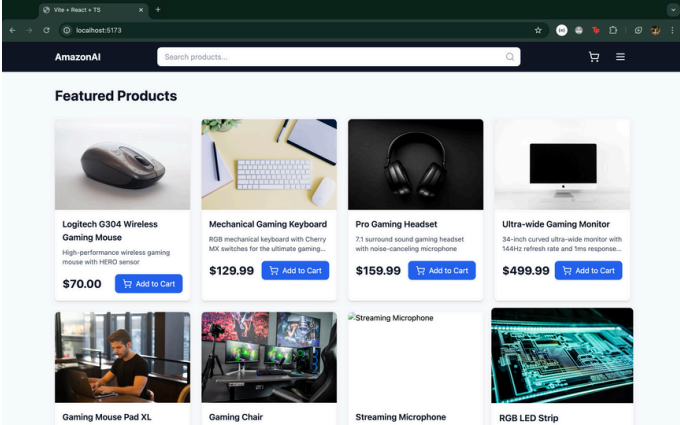
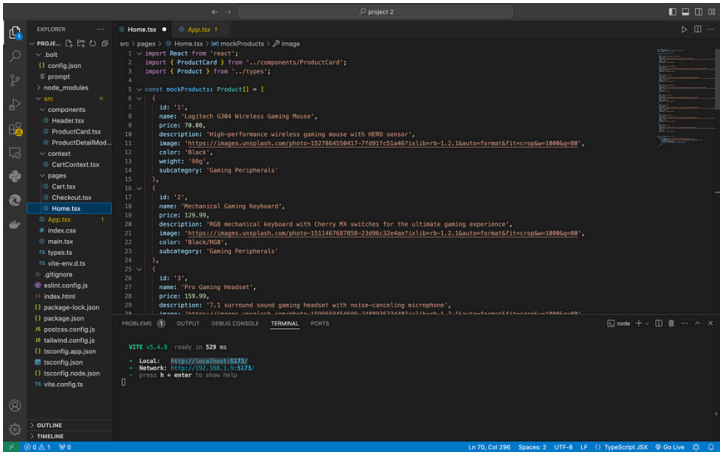
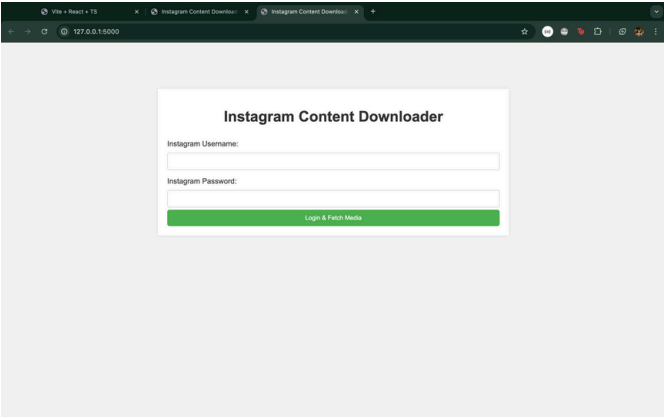
3 COMPONENTS IN SYNC:



GITHUB LINK TO THE PROJECT:

[AMAZON SAMBHAV 2024 - SHIFT HAPPENS](#)

PROTOTYPE DEVELOPMENT PHASE IMAGES (ONGOING)



NEXT STEPS (PROTOTYPE PHASE) :

1. Speech-to-Text Integration

- API Integration: Incorporate a speech-to-text API (e.g., Google Cloud Speech-to-Text, Amazon Transcribe) to process audio content from videos and convert it into text.
- Text Preprocessing: Apply natural language processing techniques to clean and preprocess the transcribed text.
- Model Adaptation: Adapt the existing ML models to process both text and audio inputs.

2. Chatbot Integration

- 1. Specific Prompts: Tailor prompts to the missing information (e.g., "What is the price of this product?")
- 2. Iterative Questioning: Ask follow-up questions if initial responses are unclear. Use multiple attempts to clarify information.
- 3. Knowledge Base Integration: Leverage a product database to suggest missing details. Analyse similar products to estimate missing attributes.

3. Cloud Deployment on AWS (for now its hosted on a local server)

- Infrastructure Setup: Set up a robust and scalable infrastructure on AWS using services like EC2, S3, and Lambda.
 - Model Deployment: Deploy the trained ML models to AWS SageMaker or other suitable services.
 - API Development: Develop APIs to expose the functionality of the system to the frontend and chatbot.
 - Security and Monitoring: Implement security measures to protect user data and system integrity. Monitor system performance and logs to identify and resolve issues.
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