amazon

CRAZY CODERS

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PROBLEM
(Theme2)

Using Visual AI technology to make amazon ecommerce more engaging more easier , allowing customer to search any buyable product by just capturing picture from mobile or directly choosing the product from video frame of amazon prime videos.

Importance of Image-Based Product Search Feature

62%

Of millennials Customers want visual search over any other new technology

85%

Of Consumers value visual information over text for fashion /furniture online surface

$14.7 B

Estimated value of visual search by 2025 end

As other big tech companies increasingly offer image-based search features across various domains, providing this capability to our Consumers is crucial in ensuring they have access to the latest technological advancements

SOURCE : IndustryARC | Visenze | The Intent Lab

SOLUTION

PART 1

SEARCH BY IMAGE : Clicking the pic of product and getting link of similar product on amazon

PART 2

SHOPPING DIRECTLY FROM PRIME VIDEOS: Click on SHOP NOW btn and get links

TechStack & work flow

TechStack

1. **Programming Language**: Python
2. **Libraries**:
   - **Keras**: For using the ResNet50
   - **NumPy**: For numerical operations.
   - **Pandas**: For data & csv manipulation
   - **Requests**: downloading images from URLs
   - **PIL (Pillow)**: For image processing.
   - **Scikit-learn**: For the K-Nearest Neighbors algorithm.
   - **Pickle**: For saving and loading models and data.
   - Ultralytics: for YOLO
3. **Environment**: Jupyter Notebook / Google Colab (for development and testing).

STEP 1 Data preparation

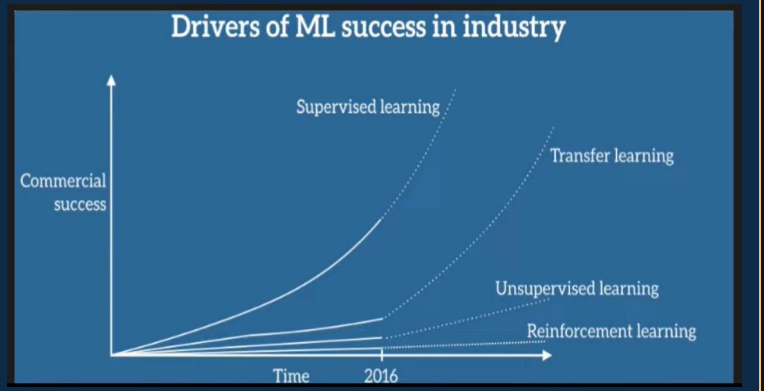
Written a script amazon_scrapper.ipynb. for scraping data from Amazon . Organised around 4000+ products data the following categories, for each category approximately 100 products scrapped

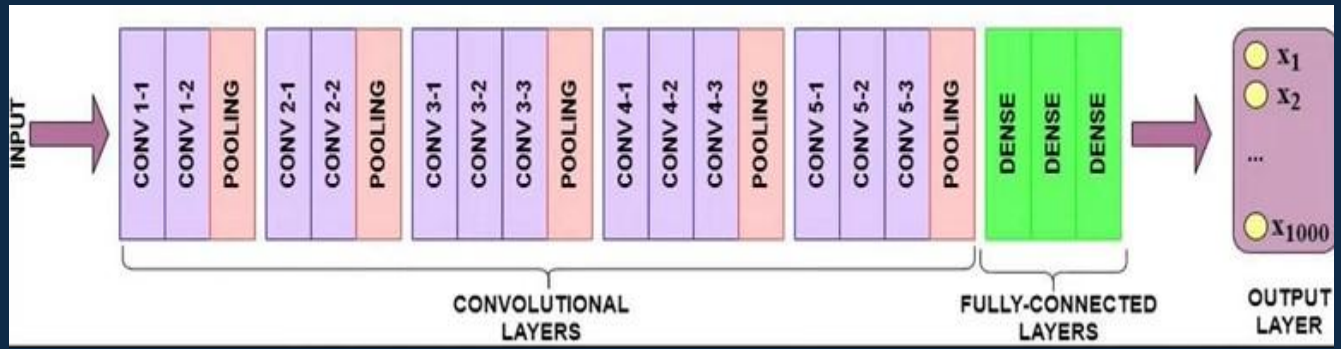
women professional dress | women party wear | women clothing | watches | traditional wear for women | stylish tops for women | saree | salwar suit | lehenga | frock for women | embroidery kurta | ethnic wear for women | crop tops | bottles cartoys | comforters | fridges | jackets tables | televisions | washing | machines

TechStack & work flow

STEP 2 FEATURE EXTRACTION BY TRANSFER LEARNING

In **transfer learning**, we utilize the base layers of a pre-trained model without including its top layers. This approach allows us to leverage the learned features from a large dataset, enhancing the efficiency and effectiveness of training for specific tasks without retraining the entire network

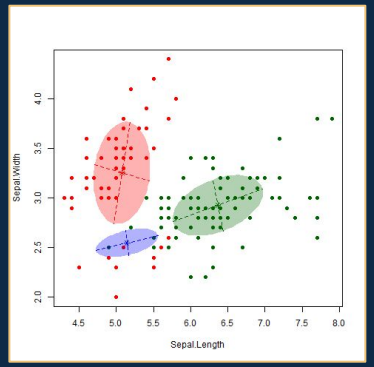




TechStack & work flow

STEP 3 TRAINING THE KNN MODEL AS SEARCHING ALGO

We customized the **KNN model** by employing cosine similarity as the distance metric, optimizing n_neighbors for efficient nearest neighbor searches, and flattening feature maps to streamline computation. Robust error handling ensured data integrity by addressing invalid URLs or inaccessible images.



YOLO WITH OBJECT CUTOUT ALGORITHM

We customized **YOLO** to process screen cutouts by adapting its input preprocessing to handle images extracted directly from screens, ensuring accurate detection and localization of objects in the context of digital interfaces.

DEMO

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IMPACTS OF SOLUTION

IMPROVED CUSTOMER EXPERIENCE

A model that accurately identifies and suggests products enhances the shopping experience, making it easier and faster for customers to find what they need. This can lead to higher customer satisfaction and loyalty..

INCREASED SALES & CONVERSION RATES

Efficient product discovery through accurate image recognition can lead to higher conversion rates as customers are more likely to find and purchase products quickly.

REDUCED RETURN RATES

Accurate product identification can reduce mismatches and incorrect orders, leading to fewer returns and exchanges, which can save costs and improve customer trust.

COMPETITIVE ADVANTAGE (NEED OF HOUR)

Advanced image recognition capabilities can differentiate an e-commerce platform from its competitors, attracting more customers and increasing market share.

SCALABILITY & FUTURE VISION

Cloud Integration

For demo we have used extracted 4000 images. For scaling we can utilize cloud platforms (AWS) to scale compute resources up or down based on demand.

Automated Pipelines

Establish continuous integration and continuous deployment pipelines for seamless updates and model improvements.

Data Management

Implement data lakes for centralized, scalable storage of structured and unstructured data.

Data Augmentation

Applying automated data augmentation techniques to continuously expand and diversify training datasets.

MARKETPLACE :

SELLING APIS: Once amazon gets peak at providing the visual product search facility the apis for searching can be made available with monetization .

SHOPPING RECOMMENDATION BY WATCH HISTORY : we can personalize recommendation by providing user ads of the buyable products in last movie she/he watched

Thanks!

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