

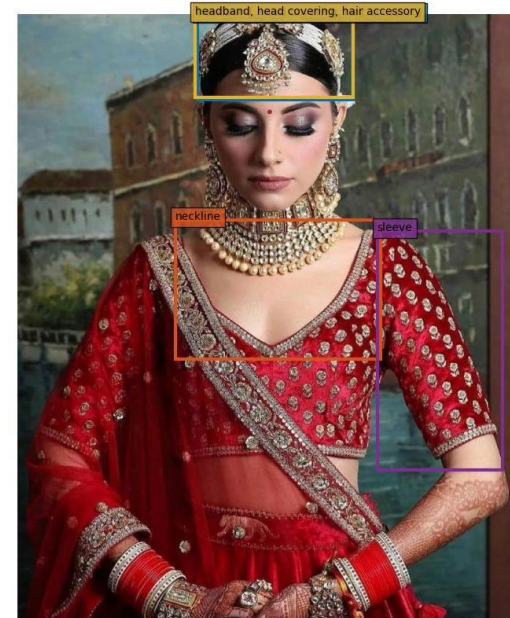


FashionBox-Paperspace

An Object Detection **POC** using Paperspace platform to by Meher Vamsi

Business Problem

- KYC: Fashion Boutique in Mumbai, revenue of 300K - 500K USD per year, Speciality: Designer Indian Wedding Garments
- Bespoke Garment design is Visual rich, consultative process
- Every designer has 1000s of reference images, continuously growing
- Using images during consultation increases trust, hence leads to client conversions
- Currently, there is no way to search for images based on specific fashion attributes
- Enabling easy discovery of images, improves experience and conversions

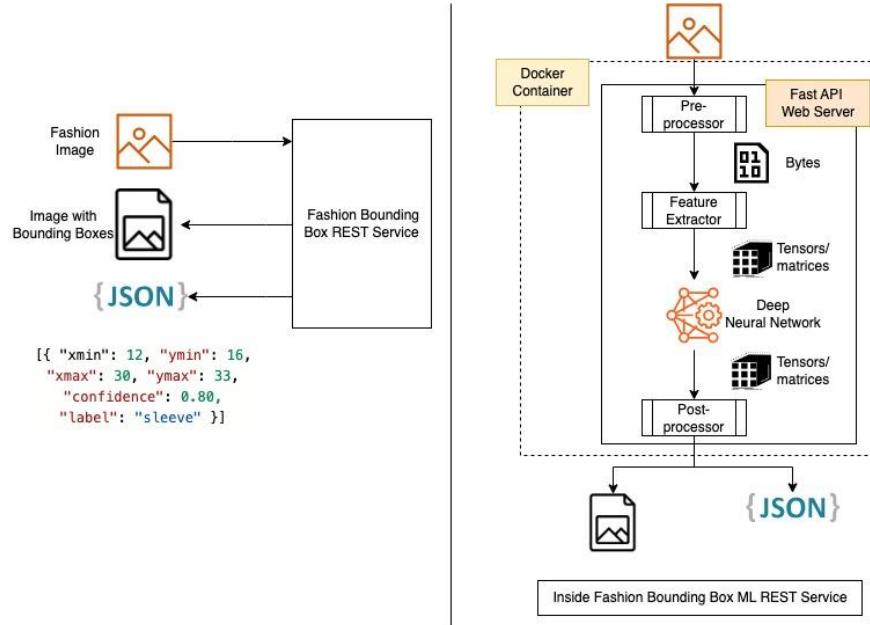


Proposed Solution and Scoping

- Easy to use mobile interface to save and organise reference images, to enables attribute based discovery
- **ML scope:** Given an image, identify and localize various fashion attributes like shoes, headgear, bags, sleeves etc.
- Assume: Sleeve and Neckline are more important for now



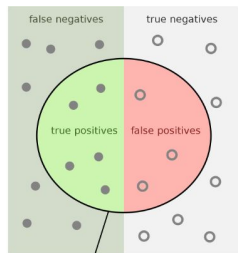
Proof Of Concept - Overview



- Research on Fashion Object Detection
<https://huggingface.co/valentinafeve/yolos-fashionpedia>
- Create ML Service on Gradient deployment to eval
- Tune the core model on GPU powered Gradient Notebooks
- Use this tuned model in ML Service

Demo

How does this work?



retrieved elements

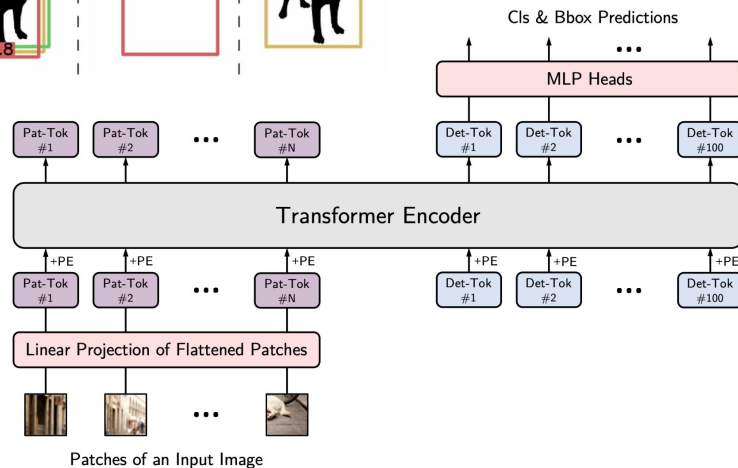
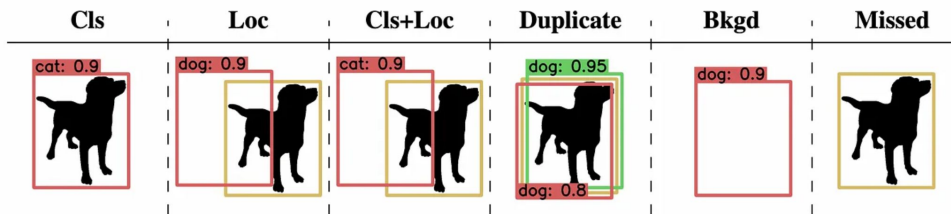
How many retrieved items are relevant?

$$\text{Precision} = \frac{\text{true positives}}{\text{true positives} + \text{false positives}}$$

How many relevant items are retrieved?

$$\text{Recall} = \frac{\text{true positives}}{\text{true positives} + \text{false negatives}}$$

$$\text{IoU} = \frac{\text{Area of Overlap}}{\text{Area of Union}}$$





Observations and Future Improvements

- Benchmarking the model with Customer data
- Further tuning the model to improve performance on classes of our interest
- Tradeoff with cost, speed and performance

| Processor Type | Inference Time(sec) | Cost(\$/hr) |
|------------------|---------------------|-------------|
| Intel i5 (local) | 45-55 | - |
| C5 | 12-15 | 0.08 |
| RTX4000 | 5-7 | 0.56 |



Challenges Faced with Platform

1. Outdated/Unclear Documentation:
 - a. Model deployment with new UI assumes wrong model path
 - b. Add Models step under deployment creation; shows no models added even after adding one
 - c. In Deploy-action, configPath param's relative path needs a clear example
 - d. Tensorboard needed a missing package to come up
 - e. Building and pulling from own container repository not clear
2. Boot times for app deployments are varied, not much clarity on progress or eta
3. HF+FastApi template Docker Build failed (base image might have been too big for my machine)
4. Hugging face login via a cell in the notebook does not work, as it's not interactive
5. Question: Will disabling the deployment stop billing?

Thank You!
