AI-Enhanced Product Photography: Generating Stunning Visuals and Precise Filtering

Introduction

•Problem Statement:

Develop an AI solution for generating stunning product photoshoot visuals and implementing a filter to identify specific products.

•KeyObjectives:

- Generative AI for Visuals
- Product Recognition Filter
- Exclusion of Non-Relevant Images

Proposed solution

- Generative AI for Visuals: Stable Diffusion
  - Powerful generative model for creating realistic product visuals
  - Capable of simulating various lighting, backgrounds, and angles
  - Fine-tuned on existing product image dataset
- Product Recognition Filter: YOLOv5
  - State-of-the-art object detection algorithm
  - Trained on custom dataset of specified products
  - Enhances identified products while maintaining image integrity
- Exclusion of Non-Relevant Images
  - Leverages confidence scores from YOLOv5
  - Excludes images with no detected products above a threshold

Libraries and Tools

- Stable Diffusion (for generative AI visuals)
- PyTorch (for YOLOv5 object detection)
- OpenCV (image processing and manipulation)
- NumPy, Pandas (data manipulation and analysis)

Alternate solutions

- Traditional image editing and manual photography
  - Time-consuming and lacks scalability
- Alternative Generative Models (e.g., GANs)
  - Stable Diffusion offers superior performance and flexibility
- Other Object Detection Algorithms (e.g., Faster R-CNN, Mask R-CNN)
  - YOLOv5 provides a good balance of speed and accuracy

Important considerations

- Respect intellectual property rights and copyrights
- Implement measures to prevent explicit or offensive content
- Obtain consent for identifiable individuals or properties
- Ensure privacy and data protection

THANK YOU