PASCAL MUSABYIMANA

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Ghent Metropolitan Area

SUMMARY

Aspiring parttime student-freelancer in full-stack development and computer-vision enthousiast feel free to check out my personal website : https://pascal-maker.github.io/developedbypascalmusabyimana/. Deeply interested in macro-economics , science and technology(machine -learning , deep learning web/app development , medical ai)Startups & data science

EXPERIENCE

Oprichter

Stealth

01/2021 - Present Gent en omgeving

Bootstrapped a tinder like swipe app for college students.

- I am responsible for user-experience
- Beta-testing
- GDPR guidelines
- Updating the app regularly
- Design and finding a product-market fit MVP
- Creating the website and its design

EDUCATION

Bachelor of Science Creative Technology & Ai

Howest

Date period

PROJECTS

Boxing Video Analysis with YOLOv8 and Ultralytics

Date period Location

I'm excited to share a project where I applied computer vision and deep learning techniques to analyze boxing matches using YOLOv8 and the Ultralytics framework.
Project Highlights:

YOLOv8 Object Detection: We used YOLO (You Only Look Once) to perform real-time object detection on video frames. This allowed us to identify and track the movements of boxing participants, making it a powerful tool for sports analysis.
Pose Estimation: I applied YOLOv8's pose estimation capabilities to precisely locate key body parts like the nose, wrists, and shoulders of the participants. This fine-grained pose data enabled us to gain insights into their movements and positions.
Foul Detection: i developed a custom algorithm to detect fouls during boxing matches. By analyzing the proximity of key body parts between participants, we could identify instances where rules were infringed upon.
Visual Feedback: When a foul was detected, I added a blue tint to the video frame to provide a visual cue, making it easier to spot fouls and helping referees in their decision-making process.
Tools and Libraries:

OpenCV: Used for video processing, frame capture, and display.
YOLOv8: A state-of-the-art object detection and pose estimation framework.
Ultralytics: A powerful deep learning library that simplified the integration and use of YOLOv8.
Applications:
This project has various applications in the world of sports analytics and coaching. It can help referees make more accurate decisions, assist coaches in analyzing their fighters' performance, and provide valuable data for in-depth match analysis.

#ComputerVision #SportsAnalytics #YOLOv8 #DeepLearning #SportsTechnology #Ultralytics #LinkedInProjects

- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)

SKILLS

Stablediffusion react-js next-js

Python Kaggle Full-Stack development

Ultralytics App-Development

Medical-Imaging Huggingface

Google-Collab Firebase Javascript

Generative-Ai Streamlit Langchain

Segment-Anything Tensorflow Pytorch

Git Docker HTML CSS

Javascript Numpy

PROJECTS

Brain-tumor detection

Date period Location

Leveraged SAM2's ability to process video data and generate accurate segmentation masks. Utilized a combination of manual prompts and the model's internal tracking capabilities to achieve robust results.

Key accomplishments:

Successfully integrated SAM2 into a Colab notebook for efficient experimentation.
Overcame challenges of limited access to medical datasets by using a YouTube video as a proxy.
Demonstrated the effectiveness of SAM2 in segmenting moving objects in real-time video.

- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)

Object Detection on Soccer Video using YOLOv8

Date period Location

Overview:
This project implements an object detection pipeline using the YOLOv8 architecture. Leveraging datasets from Roboflow and experiment management via ClearML, the project focuses on training the YOLOv8 model and performing object detection on both single frames and entire videos.

Key Components:

Dataset Acquisition: Utilized Roboflow to access and download datasets, preparing them in the YOLOv8 format for training the object detection model.

Experiment Management: Integrated ClearML for streamlined experiment tracking and management, ensuring reproducibility and collaboration throughout the development process.

Model Training: Utilized the Ultralytics YOLO library to define and train the YOLOv8 model, configuring parameters such as dataset paths, epochs, and image size for optimal performance.

Object Detection on Frames: Developed functions to perform object detection on individual frames extracted from video files using the trained YOLOv8 model, with adjustable confidence thresholds for filtering detections.

Video Processing: Implemented functions for processing entire video files, detecting objects in each frame, and optionally saving annotated frames to output video files. Real-time display of processed videos was also enabled.

Conclusion:
This project showcases the successful implementation of an object detection pipeline using YOLOv8, demonstrating its effectiveness in real-world applications. By integrating datasets from Roboflow, ClearML for experiment management, and the Ultralytics YOLO library for model training and inference, the project provides a comprehensive framework for object detection tasks on both static images and dynamic videos.

- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)

Real-Time Person and Vehicle Tracking with Object Detection and Pose Estimation In Ghent

Date period Location

This project demonstrates the use of object detection and pose estimation to track people and vehicles in a video. The project uses the YOLO object detection model to detect cars, buses, trucks, and people in the video. It then uses the Ultralytics pose estimation model to track the body parts of people who are detected. The project also uses a Kalman filter to smooth out the motion of the body parts and a particle filter to track multiple people simultaneously.

- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)

PROJECTS

📊🚗 Region Counting Using YOLOv8 (Inference on Video) Applied to Ghent

Date period Location

Region counting is a methodical approach that finds applications in diverse fields. In our case, this project is geared towards tracking and counting objects in specified areas, such as the Korenmarkt Watersportbaan and Rooigemlaan. This information can be pivotal for enhancing traffic management and safety in these areas.

🖱️ Interactive User Experience:
The Left Mouse Click interaction offers users the ability to dynamically modify counting regions on the fly, providing a seamless and intuitive experience. This feature ensures the adaptability of the system to different video scenarios.
🛠️ Key Features:

Real-Time Object Detection: Employing YOLOv8, our system ensures precise identification and counting of objects within specified regions in video feeds.
Interactive Region Adjustment: Regions can be dynamically adjusted in real-time using a simple Left Mouse Click. This interactive feature enhances user control and flexibility during the counting process.
Customizable Regions: Tailor regions to meet your preferences and requirements, making the system adaptable to various scenarios and use cases.

- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)