

A Web-Based Application for Managing Photos of People in Large Events Using Computer Vision Techniques

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Cursos: LECI

Introduction

Large events, such as concerts, sporting events, and political rallies, can generate a large number of photos of people. These photos can be used to document the event, identify people, and track the movement of people. However, managing these photos can be a daunting task, especially for photographers who are trying to capture as many photos as possible.

This project proposes the development of a web-based application that can help photographers manage photos of people in large events. The application would use computer vision techniques to identify and track people in the photos. It would also allow photographers to label the photos (manually or automatically using Artificial Intelligence) with information about the context of the photo. The application would provide photographers with tools to enhance the photos, such as cropping, removing noise and improving the color balance.

The application would be a valuable tool for photographers who want to improve their efficiency. It would also be a valuable tool for event organizers who want to document and analyze large events.

One of the most important scientific topics for this project is face recognition. Face recognition in the wild is a challenging problem, as it involves identifying people in uncontrolled environments. This can be affected by factors such as lighting conditions, occlusions, and pose variations. However, recent advances in computer vision have made it possible to develop effective face recognition algorithms that can work in the wild. This project will explore the state-of-the-art algorithms for face recognition.

The project will have the following requirements (among other to be defined during the exploration phase):

- The application would allow photographers to upload photos of people in large events.
- The application would use computer vision techniques to identify people in the photos.
- The application would also allow photographers to label the photos with context information about the scene and the people (manually or automatically using AI).
- The application would provide photographers with tools to enhance the photos, such as removing noise and improving the color balance.
- The application would also provide photographers with tools to estimate the depth of the people in the photos, for querying purposes (eg. first or second plane faces, people alone or in groups, etc.).

Workplan

- Discuss the project goals and objectives.
- Research the state-of-the-art in face recognition and image processing.
- Gather datasets of photos of people in large events.
- Implement face recognition algorithms.
- Evaluate the performance of the face recognition algorithms.
- Identify the challenges and limitations of these algorithms.
- Implement the image processing module to enhance the photos.
- Evaluate the performance of the image processing module.
- Identify the challenges and limitations of the image processing module.
- Implement depth estimation algorithms.
- Evaluate the performance of the depth estimation algorithm.
- Identify the challenges and limitations of the depth estimation algorithm when matching with the face detection process.
- Integrate the face recognition, image processing, and depth estimation algorithms into a web-based application to fulfil the goal of the project.
- Test the web-based application.
- Identify the challenges and limitations of the web-based application.
- Make improvements to the web-based application based on the feedback from testing.
- Prepare a final report and presentation on the project.