

Project Proposal

Title:

Celebrity Face Detection with Computer Vision

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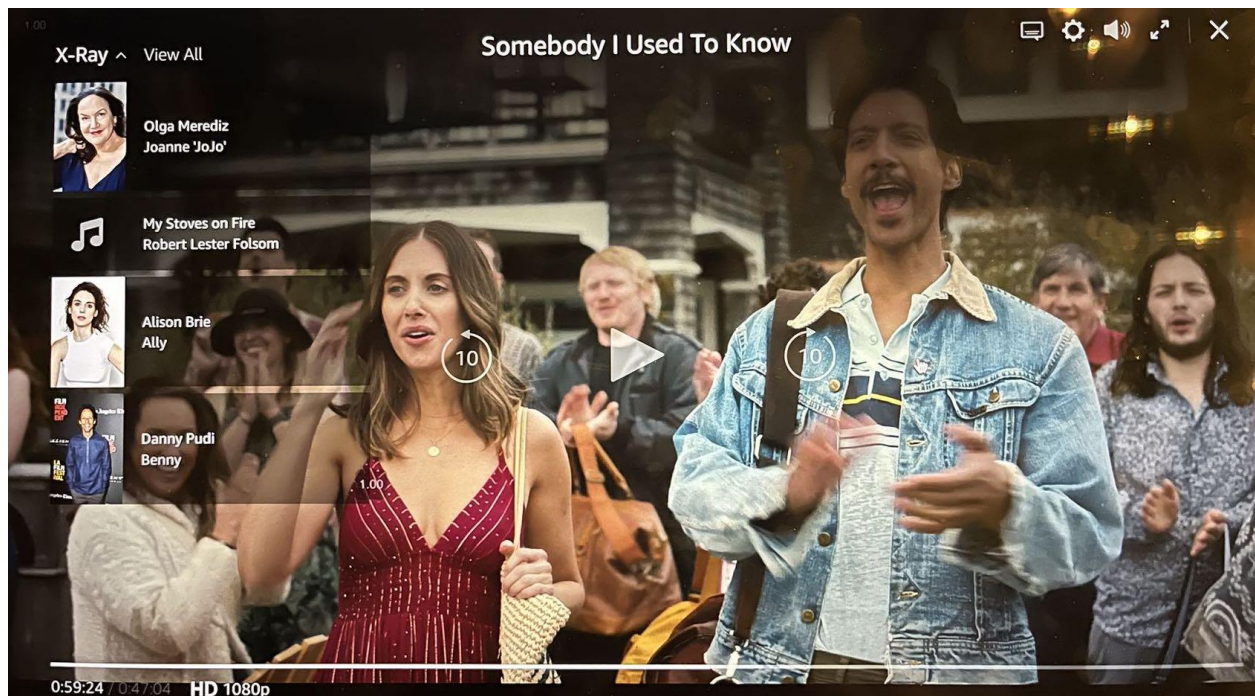
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Background and Motivation:

Online streaming services have been leveraging the power of Computer Vision and showing the viewers more information about the shows. Amazon Prime Video, for one, has a feature that shows the main actors' names when stopping on a particular frame. In this project, we will replicate this feature using face detection and facial recognition.

Example of Amazon Prime Video:



Data:

We will use the Celeb Attributes Dataset (<http://mmlab.ie.cuhk.edu.hk/projects/CelebA.html>), a face attributes dataset that contains a total of more than 200 thousand images for over 10 thousand celebrities. More specifically, the CelebA dataset contains:

- 10,177 identities.
- 202,599 face images.
- 5 landmark locations, and 40 binary attributes per image.

For the faces, we will use images that have been roughly aligned according to the location of the eyes. We will generate a similarity score based on facial features using this dataset and any new images fed into our model to determine if they are the same person or not.

Some foreseeable problems may include the number of images per celebrity (missingness or low image count for less well-known actors and actresses). We will also need to contact the CelebA database owners in order to obtain the identity information (such as name, age, etc.) associated with each image. In case we couldn't obtain these details, we would only be able to identify the number of celebrities in a frame as well as possibly some attributes and landmark locations.

Scope:

We will train a Convolutional Neural Network (CNN) for capturing image similarity in the CelebA dataset. Given an image detected by Yolo, our model will predict whether the image corresponds to a Celebrity or not, and if the identities are provided by the owners, we will also inform who is the celebrity in the image.

This project will provide an unique opportunity to the majority of our group members to apply computer vision techniques for the first time, and explore the use of GPU for training a deep neural network in a computationally expensive task.