

# ACTORS DETECTION AND RETRIEVAL IN MOVIE SCENES

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## 1 Introduction

Our idea is to build a deep learning algorithm to recognize and detect celebrities acting in different movie scenes, even if they are dressed up, made up or in movement. The literature necessary to work on this kind of model requires the study of convolutional neural networks for extracting the most salient features useful to describe each actor we are recognizing and algorithms for edge detection, in particular for face detection.



## 2 Steps towards the goal

- Create our own dataset of actor faces, labelled with their name
- Process the images with filters and resize them all to the same dimensions
- Starting from VggFace weights, fine tune the network on the last two fully-connected layers
- Apply dropout and some heuristics to reach an accuracy higher than 90% during training on our dataset
- Starting from a video, for each possible frame use yoloface to detect the face of the actor
- Given a frame and the bounding box of the face, classify the correct names for the actor in the scene.
- Retrieval: provide additional photos and information about the actors founded.

## 3 Description

In order to build the dataset, we take original images organized in directories named with the name of the actor, extract the first 12 images, resize them to (224,224) and assign each of them to the TRAIN set. The same is done for the other 8 images, assigned to the TEST set.

Starting from the weights for VggFace available at <https://www.robots.ox.ac.uk/>, we rewrote the VGG FACE network pre-trained with LFW dataset.

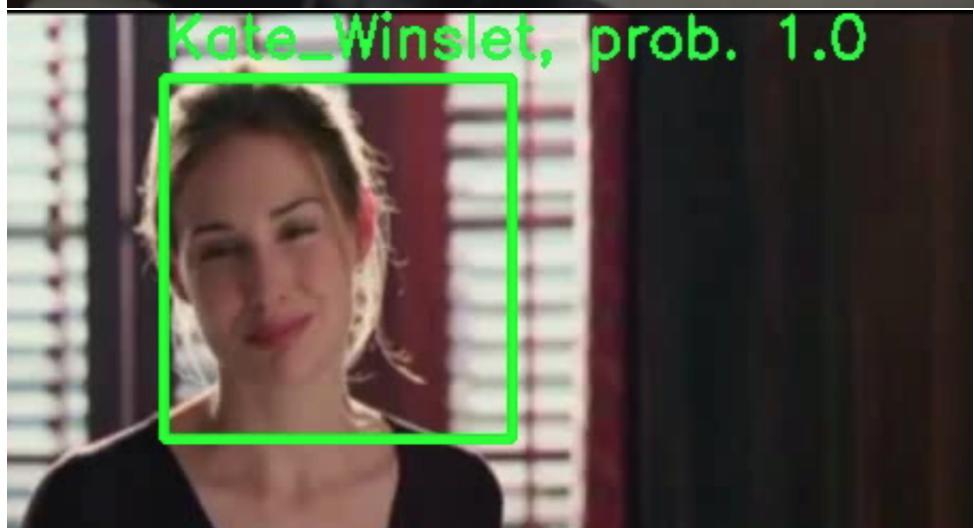
The last layer has been modified to 16 output parameters in order to classify with the actors in our dataset. Then we performed a fine-tuning of the last two layers FC and saved final weights.

To integrate our model with the face-detection algorithm we loaded the trained network in a script, then extracted each frame from a video and performed face detection with yoloface. For each face detected, forwarded it to the network and draw a rectangle around the face with the prediction of the actor name, in the end reconstruct the video.

## 4 Labels

Anne Hathaway, Anthony Hopkins, Brad Pitt, Claire Forlani, Demi Moore, Denzel Washington, Johnny Depp, Kate Winslet, Leonardo DiCaprio, Margot Robbie, Matt Damon, Matthew McConaughey, Morgan Freeman, Robert DowneyJR, Scarlett Johansson, Tom Cruise

## 5 Demo



Brad\_Pitt, prob. 1.0



Anthony\_Hopkins, prob. 1.0

