

Abstract

The purpose of this project is to implement a software to recognize faces in low-resolution images. Exploiting computer vision tools and libraries, it requires a low-resolution image or a video as input and tries to enhance its resolution for recognition purposes. The hierarchy of the processes is as follows:

- Get an input image
- Perform super-resolution techniques
- Perform face recognition
- Save and show the result

The implemented super-resolution algorithm is based on a unified framework combining two different approaches, which are the Classical SR and Example-based SR. Each one has its pros and cons, and unifying them in a joint framework has been proved to achieve better results. Performing face recognition process, the OpenCV library was proved to be helpful. It has functions that make implementing facial algorithms easier.

This project is implemented using Python, and the OpenCV library is used to perform image processing algorithms. It is to be considered that there are different versions of Python and OpenCV. After comparing the various versions of them, Python 2.7 and OpenCV 3.2 were chosen for this project.

Index Terms: Image processing, Low-resolution, Super-resolution, Face recognition.