

Comparisons of Facial Recognition Algorithms Through a Case Study Application

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Abstract—Computer visions and its applications have become important in the contemporary life. Hence, researches on facial and object recognitions have become increasingly important both from academicians and practitioners. Smart gadgets such as smart phones are nowadays capable of high processing power, memory capacity, along with high resolutions camera. Furthermore, the connectivity bandwidth and the speed of the interaction have significantly impacted the popularity of mobile object recognition's applications. These developments in addition to computer vision's algorithms advancement has transferred object's recognitions from desktop environments to mobile world. The aim of this paper to reveal the efficiency and accuracy of the existing open source facial recognition algorithms in real-life setting. We use the following popular open source algorithms for efficiency evaluations: Eigenfaces, Fisherfaces, Local Binary Pattern Histogram, the deep convolutional neural network algorithm and OpenFace. The evaluations of the test cases indicate that among the compared facial recognition algorithms the OpenFace algorithm has the highest accuracy to identify faces. The findings of this study help the practitioner on their decision of the algorithm selections and the academician on how to improve the accuracy of the current algorithms even further.

Keywords—Facial Recognition Algorithms; OpenFace; Mobile Facial recognitions.

1 Introduction

We deal with photos and images regularly through our smart phones. These devices and images are seen and taken everywhere, e.g., in streets, in supermarkets, and in many other public locations. We use cameras for various purposes such as security [1], health [2]. In addition, athletics use cameras such as GoPro's [3] for recording extreme sports and share the excitement with others either as live stream or offline. Furthermore, the use of camera has extended to the overcome some of the human constrain such as helping the color blind people [4]. In addition to the hand-held cameras for offline and online detection ,e.g. [5], the usage of drone based cameras has increased [6]. Drones are used to take and compare images especially for areas that are not easy to explore.