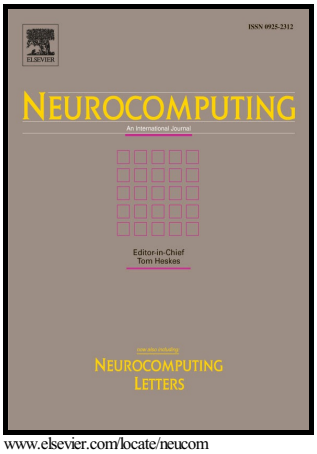

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Evaluation on Synthesized Face Sketches

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Abstract

Face sketch synthesis takes an important role in law enforcement and digital entertainment. For law enforcement, it is usually considered as an intermediate procedure for sketch based face recognition. In this scenario, face recognition accuracy can be used to evaluate the performance of face sketch synthesis methods to some extent, but not directly. However, for other applications such as digital entertainment, visual quality is much more important to users. Then face recognition accuracy is inappropriate to evaluate the visual quality of synthesized sketches. This is because face recognition methods mainly depend on some discriminative information while the visual quality of synthesized sketches heavily relies on texture information. To this end, we construct a synthesized face sketch database for the purpose of image quality assessment (IQA). These synthesized sketches are generated by five face sketch synthesis approaches. In addition, eight representative full-reference IQA methods are evaluated on this database. Some insights can be found from our experiments, which have great significance to image transformation problems such as face synthesis and face hallucination.

Index Terms

face sketch synthesis, image quality assessment, face recognition.

I. Introduction

Face sketch synthesis aims to transform an input face photo to a sketch portrait [1]. It is usually applied in law enforcement [2], [3], [4] and digital entertainment [5], [6]. For law enforcement, face sketch synthesis is utilized as an intermediate procedure to narrow the great gap between face photos and sketches. After transforming all gallery photos into sketches, a probe sketch drawn by an artist can