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Real Time Face Hallucination for Recognition

Alexander Knaust
Department of Computer Science, University of Texas at El Paso, awknaust@miners.utep.edu

Olac Fuentes
Department of Computer Science, University of Texas at El Paso, ofuentes@utep.edu

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Low resolution video and images are a common hindrance in recognition of people or enjoyment of a communication service, but are often necessary due to high hardware costs or low bandwidth availability. In particular, surveillance images of faces are commonly of too low a resolution to recognize reliably, hampering their purpose. Face Hallucination consists of Super-Resolution techniques to enhance the images of faces beyond what can be achieved by standard interpolation techniques. Unfortunately, the facial hallucination algorithms in present literature are slow, taking up to an hour with modestly sized images. We propose optimizations of the Eigentransform Super Resolution algorithm in order to perform facial hallucination in real time on videos. These optimizations are implemented in a program which uses facial detection techniques to find and track faces, which are then super-resolved to allow for better recognition.