

ABSTRACT

Recently, there have been a number of studies trying to improve face recognition systems by means of hybrid approaches. In such approaches, one will have to mix and match techniques in building a system that will be appropriate for the problem at hand. This study proposes a novel integration framework to help researchers/integrators integrate components into a face recognition system. The framework is composed of Dependency Graphs with Face Image Quality Evaluation and Integration Path Table. The Dependency Graph has two levels of abstraction; component level and algorithmic level. Component level shows the overall components of a given system and helps determine optional components that may be added or omitted based on face image quality evaluation. It can be partitioned to illustrate techniques used within a component of interest. Algorithmic level focuses on a technique of interest, and depicts algorithms used together with their respective inputs and outputs. The Integration Path Table lists all possible alternative integration paths of a given system. Applications of the proposed framework for integrating components to build a new face recognition system are demonstrated in details. The framework can also be used to dissect an existing system upon which alternative components, techniques and/or algorithms can be systematically trialed in order to enhance the system's performance. Results can be assessed in different dimensions such as accuracy and execution time to help integrators determine integration paths that are best suitable to system requirements. The framework is also applicable to other biometric-based recognition systems in the same fashion.