Master's thesis project proposal

Embedded and Intelligent Systems program (30 points projects)

Project: Continuous personal recognition based on video information

This project is about recognition of individuals using face/iris components usually found in videos acquired with cameras in real-world conditions.

Context

A correct assessment of identity has become an important task in many applications which range from border control or surveillance to more convenient civil applications such as e-commerce or log-in to personal accounts. The need for reliable user authentication techniques has increased in the wake of heightened concerns about security and rapid advancements in networking, communication, and mobility.

Biometrics, described as the science of recognizing an individual based on his or her physical or behavioral traits (e.g. fingerprints, iris, face, etc.), is beginning to gain acceptance as a legitimate method for determining an individual's identity. Biometric systems developed during the last decade work on the premise of high quality data acquired with dedicated high-cost sensors under controlled conditions, and demanding great user collaboration. But more relaxed real-world scenarios impose severe data quality degradation that existing biometric systems are not able to overcome. The proliferation of portable hand-held devices with biometric acquisition capabilities or recognition at-a-distance and on-the-move are just two examples of non-ideal scenarios not yet sufficiently mature, which require the development of robust algorithms capable of handling a range of changing characteristics.

The focus of this project will be on the use of face/iris components acquired with video cameras. Challenges here will include the ability to cope with head movement, occlusion with external objects, changes in illumination or face pose, etc., typically found in real acquisition conditions.

Requisites

Student should have done the courses Image analysis and Computer Vision in 3D

Programming will be done in Matlab, so a good command is mandatory

Contact information

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