A Novel Approach to Biometric Identification Using an Iris Scanner

Demetriou, Sophia

A biometric identification system that is coded in Java language on Netbeans IDE which automatically identifies a person by comparing previously scanned bitcodes of their iris. The purpose of this program is to provide an accurate method of identifying a person by making use of the unique random patterning of their iris. The iris recognition system consists of an automatic segmentation system that is based on the hough transformer and is able to localise the circular iris and pupil region, including eyelids, eyelashes and reflections. The extracted iris region is then normalised into a rectangular block with constant dimensions to account for the imaging inconsistencies. The Gabor filter is extracted and encodes the unique patterning of the iris which is used for comparison purposes and stored in the database. In a set of 120 individuals; an overall percentage of 3% false detection incurred. Majority of false detection came from candidates with darker eye color because of the difficulty in getting a perfect reading without the use of laser technology or light emission (which could compromise eye safety). To conclude, the results of this program shows that it is accurate and is also cheap and user friendly. The iris is one of the most reliable parts of a person to use for identification because of its properties and its uniqueness and it is not an easy body part to fraud. With further testing, accuracy may be improved but currently this prototype program runs without errors and has minimal faults.

Awards Won:

Fourth Award of $500