5.1 Summary

The analysis of the developed iris recognition system has revealed a number of interesting conclusions. It can be stated that iris localization and segmentation are the critical stage of iris recognition, since areas that are wrongly identified as iris regions will corrupt biometric templates resulting in very poor recognition. The results have also shown that iris localization can be the most difficult stage of iris recognition because its success is highly dependent on the imaging quality of eye images. With the CASIA v3-interval database, only 92.84% of the images managed to segment successfully due to poor imaging conditions, while 75.49% of the CASIA v3-Twins database images segmented correctly.

Another interesting finding was the feature extraction process. 2D WPT was used based on quadtree model and generated 85 entropy data. 4 of 85 entropy data were chosen based in the experiment. If all entropy data had been used, the result would have been poor accuracy conditions due to overfitting.

After iris feature extraction, FSVM with 3 SVM kernels (RBF, POLY, and SIGMOID) were used for iris identification. The use of C=10000 and CASIA-v3-Interval, resulted in recognition rate 90.75% for RBF kernel, 83.85% for POLY with degree 3, and 8.84% for SIGMOID. While using C=10000 and CASIA-v3-Twins, we got recognition rate 68.16% for RBF kernel, 45.85% for POLY with degree 3, and 10.49% for SIGMOID.

5.2 Future Work

FSVM is built by SVM framework. As we know, we can improve SVM algorithm with quadratic problem optimization and kernel tricks. We use 3 SVM kernels (RBF, POLY, and SIGMOID) on this research. In order to improve SVM algorithm, more SVM kernels could be implemented.
Another extension to the system would be to interface it to an iris acquisition camera. Now instead of having a fixed set of iris images from a database, a frame grabber can be used to capture a number of images, making it possible for improvement of the recognition rate.