Postgraduate student: **Liakos Klestis**

Thesis Title:

Computer Aided Diagnosis system for discriminating normal from abnormal breast lesions, segmented from ultrasound images

Abstract:

Aim: This study describes the development of a Computer Aided Diagnosis (CAD) system for classifying lesions, segmented from ultrasound breast images, as normal or abnormal.

Material and methods: 77 lesions (38 abnormal and 39 normal) were segmented from ultrasound images by a specialized physician. Thirty (30) textural features were extracted, from the lesion's image histogram, the co-occurrence and the run length matrices. The best 10 features, displaying statistically significant differences between the two classes, according to Wilcoxon test, were selected in order to design the system that would classify the lesions as normal or abnormal. Five (5) classifiers were employed (3-NN, 5-NN, Bayesian (linear), Bayesian (quadratic), SVM). For each classifier, the best feature combination was found by the exhaustive search method and the system's performance was evaluated by two methods (Leave One Out, External Cross Validation). Finally, a multi-classifier scheme was designed to combine the all 5 classifiers for improving system accuracy.

Results: Highest classification accuracy was achieved by the majority vote design (81%) and highest single classifier accuracy was achieved by the SVM classifier (79%).

Examining Committee

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