

# Over Some Open 2D/3D Shape Features Extraction and Matching Problems

Nikolay Metodiev Sirakov

Dept. of Computer Science and Dept. of Math

Texas A&M University-Commerce

Phone: (903) 886 5943, E-mail: [Nikolay\\_Sirakov@tamu-commerce.edu](mailto:Nikolay_Sirakov@tamu-commerce.edu)

This talk is addressing the Computer Science 595 students and aims to formulate and discuss set of problems subject of research interests in the field of Content Based Image Retrieval, Image Database Management, Image Database mining for feature extraction. The problems are of level of difficulties that can allow a solution in a semester. The promising approaches, algorithms and/or tools will be considered for further development and improvement in order to be presented in conference papers. Areas of possible application are: satellite, medical, biological or geological imaging.

The amount of digital images has increased enormously over the last few years in Internet, satellite, medical, and environmental imaging. Thus the problem for efficient image database management and quick image retrieval is emerging as an active area of research that attracts the attention of mathematicians, computer scientists and engineers. On the other hand, there is a lack of efficient image retrieval tools on the software market. It makes the problem promising and attractive for the software developing corporations and agencies working in medical, satellite and/or geo imaging.

The following list of problems will be announced, and discussed during the seminar:

1. Segmentation of images that contain more than 2 objects. Active contours with elasticity will be used;
2. C++ realization of an existing algorithm based on active convex hull model. Mathematica tool is developed on the base of the model and will be used for the C++ tool;
3. C++ tool for 3D edge detection using active surfaces. A Mathematica tool developed on the base of an existing model is available and can be used;
4. Surface painting for problem 3;
5. Shape features extraction and indexing;
6. Boundary Support to shape analysis.

**All graduate and undergraduate students, as well as all faculties from Math and Computer Science Departments are welcome to attend the speech.**

**From most of the problems undergraduate research projects could be derived and formulated. Undergraduate and Graduate students interested in research development are welcome to contact me at any time.**

***Building: Journalism***

***Room: 129***

***Date: Wednesday September 29.2004***

***Time : 3:30 PM***