PIRE 2009 Project Proposal

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Supervisor's Name and Title at FIU/FAU: Dr. Shu-Ching Chen, Associate Professor

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Project Title: A semantic multimedia search and retrieval framework

Problem Statement: *Briefly explain (in one paragraph) the research problem that you are going to address in this project.*
Current multimedia search engines do not make use of semantic concepts to perform search and indexing of image and video data. Image and video processing techniques are too costly to provide rapid information needed by most major search engines. No major search engine makes use of semantic data retrieved from image or videos when indexing multimedia search results. The goal of this project is to develop a framework to allow the integration of image and video features in the indexing of multimedia data.

Motivation and Impact: *Provide a brief explanation (in one paragraph) of the motivation of this work and its significance.*
The project that I am proposing is to develop a method to rank images and videos based on a fusion of textual and semantic content information. By fusing the textual information and content information the goal is to decrease the computational load need to analysis a set of multimedia objects and increase the accuracy of the rankings returned.

Current Status: *Provide a brief overview of the current status of the project. If this is an ongoing work, please describe preliminary results. In either case, what related work is going on in this area at FIU/FAU, the partner institution, or elsewhere?*
The proposed project is an ongoing project related to the work that is being done by Dr. Shu-Ching Chen. This project will directly relate to the students on going research. Preliminary results have shown that the proposed task is feasible but extensive more research is needed to design a framework capable of being used in a real time search engine.

Research Roadmap: *Provide an itemized list that shows your research roadmap/timeline and that lists expected outcomes of your research including a paper to be published, etc.*
Major goals to be achieved by this project are:
1. Identify ideal features and processing algorithms capable of extraction semantic in near real-time

2. Develop a model to directly correlate semantic features with textual information.
3. Develop a system to allow index and search of multimedia, that performs in near-real time.

Relation to PIRE Core Research Projects: *Briefly explain how the project fits into the PIRE theme of Cyberinfrastructure enablement. Which box in the table (our "9 box" figure at http://pire.fiu.edu/research.php) does your research fit into and why? If this project is not directly related to any of the boxes in the table, then provide a rationale on how this project is related to Cyberinfrastructure enablement.*
The proposed project does not fit into any specific PIRE research project but the results will be beneficial to data mining software tools and bioinformatics applications. Most bioinformatics applications have to deal with a large number of medical images and trying to process, store and search through them is a difficult task. This project will provide methods to retrieve additional content information from images which will allow for further information to be retrieved from medical images that will help in the processing, storing and searching of the images. The results of this project will also provide for the extraction of information from multimedia data which will be useful for data mining software tools. Content information from multimedia provides for an additional layer of data that can be useful for many data mining applications.