

**Center for Cyberforensics:**

**An Interdisciplinary R&D and Academic Program to Counter Terrorism & Crime**

**from**

**PI: Peter P. Chen, Computer Science Department**

**With support from Guoli Ding, Math Department**

**(Due to the shortage of time in preparing this pre-proposal, no effort was made to solicit participants from other departments. If this pre-proposal is accepted for the next round review, more participants are expected to join this proposal from other schools including the schools of business and engineering.)**

**Submitted to LSU Center for Applied Information Technology and Learning**

**September 25, 2001.**

## **Introduction:**

The 9/11 attacks on WTC and Pentagon exposed the vulnerability of the United States to terrorist attacks. It also exposes the lack of sufficient number of investigators trained in modern investigation techniques and tools. After the attacks, the FBI mobilized from 4 to 7 thousands of agents plus support personnel to work on the case, not to mention the resources devoted to the case by other agencies such as CIA and NSA. However, most of the FBI agents were trained in conventional crime investigation methods and may not be able to quickly adapt to the new Internet tools that are necessary for the investigation of the terrorists and their connections in this particular case.

We are proposing to set up an interdisciplinary Center for Cyberforensics (CCF) that will draw faculty from various departments on the campus. The Center can build upon existing grants from the Air Force to get major funding from Federal and private sources to complement the funding from the IT Initiatives. Currently, Peter Chen of Computer Science Department has two grants on Cyberforensics that involve faculty from two departments, including Guoli Ding of the Math Department and Steve Seiden of the Computer Science Department. It is likely that a faculty member from another department of LSU will be put on the grant full time in the near future. In other words, we already have an interdisciplinary team with which to start.

This Center will leverage the expertise in the participating individuals and departments, enabling them to form special degree programs or options in cyberforensics in their own departments and to obtain major federal and private funding. Because there is virtually no such center for Cyberforensics in any university at this time, the proposed Center will become a focus of attention for national and international media, enhance the reputation of LSU, and attract the most talented students and faculty to LSU.

## **Goal and Proposed Approach:**

Our goal is to establish the CCF as a world leader in teaching and research in cyberforensics to counter crimes and terrorism.

We will be working on both definitions of “cyberforensics”: (1) to search and trace using cyber techniques any culprits who attack us via any means, and (2) to search and trace cyber attackers.

In terms of academic programs, we plan to set up “concentrations” in each relevant discipline. For example, in the computer science department, we are proposing to set up a new program of study for masters students called, “systems science with cyberforensics concentration.” Similarly, we can set up similar concentration options in other related departments. After our center is operational and if there is a serious need, we will then consider the setting up of a stand-alone academic program in cyberforensics.

In terms of a research program, we propose to develop the center in several stages depending on the sources and the amount of funding:

Stage 1: Concentrate on the technology of tracking and tracing terrorists and criminals. For example, we will develop mathematical algorithms and software to identify potential culprits and to trace them from one data point to another data point.

Stage 2: Expanding the scope of coverage: For example, in Stage 1, we may concentrate on tracing terrorists and E-commerce crime criminals. In Stage 2, we may expand the coverage to harassment cases, particularly cyber-harassments.

Stage 3: Expanding the scope of scientific disciplines: For example, we may look into tracking and tracing bio/chemical weapons, techniques, tools, and terrorists. Another example is that we may put more emphasis on the legal issues. For example, what kind of new laws are needed for tracing criminals and terrorists using cyber techniques?

Please note that the exact contents of each stage depend on the funding levels and the sources of the funding.

### **Relevance to Main Themes:**

The Center is directly relevant to several main themes of the LSU portion of the IT initiatives:

- Virtual Organization and E-Commerce: This proposal is related to cyber-crime in E-commerce and the security issues in virtual organizations.
- High-Performance Computing and Networking: This proposal is related to (1) high speed web searching of leads and related information, (2) Internet security, (3) Internet privacy.

The Center is in-directly related to other themes:

- Biological computing: For example, the design and implementation of databases for tracking bio/chemical weapons, techniques, and potential terrorists.
- Geo-informatics: For example, the linkages of relevant information with geographical information.

### **Resources Needed from the IT Initiative Program:**

In addition to seeking Federal and private funding, we would like to request the following resources from the IT Initiative Program to set up the core of the proposed Center:

- 2 Faculty positions per year: one in the Computer Science Department and the other one in a department other than Computer Science (rotating among participating departments).
- 2 RA's for the CS department and 1 RA for each participating department.
- \$10,000 each year for external consultants and lecturers.
- \$50,000/year for laboratory equipment, software, and maintenance.

**Summary:**

The Center for Cyberforensics will serve as the focus point for both research and teaching in cyberforensics. This center will provide a golden opportunity for Louisiana to be one of the first states to set up such a center and to develop it into a center of excellence for the whole country, and possibly for the whole world.