

Computing in Context - State of Contextual Project: Intelligence and Security Informatics

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Agenda



- Intelligence & Security Informatics
- Relevant IS / CS Courses
- ISI Teaching Modules
 - Development
 - Implementation
 - Module Evaluation
- Ongoing and Future Works

Intelligence and Security Informatics (ISI): Introduction



- A cross-disciplinary field with many stakeholders
 - Researchers in IT, CS, public policy, bioinformatics, behavioral studies
 - Law enforcement agencies, IT consultants and practitioners
 - Supports counterterrorism and homeland security missions of anticipation, interdiction, prevention, preparedness and response to terrorist acts.

ISI Defined



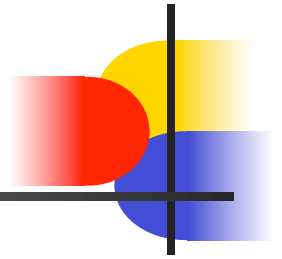
- Definition (ISIConference2013.org)
 - The development of advanced IT, systems, algorithms, and databases for international, national and homeland security related applications, through an integrated technological, organizational, and policy-based approach
- Relationship with CS / IS
 - AI, ML, data/text/web mining
 - Database systems, big data
 - Computational linguistics
 - Risk management
- IEEE ISI annual conference began in 2003

Educational Development



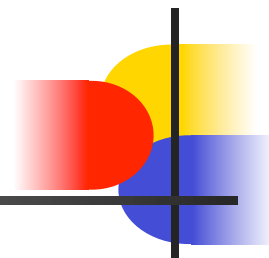
- “Web computing” - University of Arizona
 - Security informatics
- M.S. in Security Informatics - Indiana University, School of Informatics and Computing
 - Also has security informatics track in PhD program
- SI Track in PhD program, Penn State U, College of IST
 - Cyber security
- M.S. Course in ISI, U. Abertay Dundee (UK)
 - Most programs / courses are at graduate level. Little work found on preparing UG students for ISI field.

ISI in the CiC Project



- To develop new problem-based teaching modules, curricular guidelines, and materials in ISI at UG level
- To disseminate the modules, guidelines, and materials widely for instructor use
- To implement the modules at UG courses
- To evaluate impact of the use of the modules

Module Development



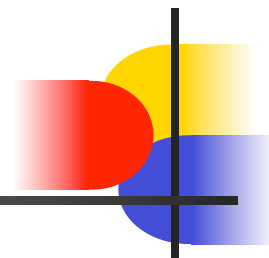
- **Module**
 - An independent session of learning
 - Consists of goal, motivation, body of knowledge, exercise, and evaluation
- **Module usually contains a context**
 - E.g., cyber crime investigation, security analysis

Sample Modules (1)



- Creating and Formatting a Spreadsheet
 - Team work: Creating an Excel spreadsheet for cyber crime investigation
 - BOK: data type, usage in Excel
 - Ex: Book - Excel Tutorial 1
- Using Functions in a Spreadsheet
 - BOK: representation of formula, computation with formula
 - Video: [Excel function](#)
 - Ex: Book - Excel Tutorial 2

Sample Module (2)



- Designing a Database
 - Teamwork: Listing the entity types and fields for a cyber crime investigation DB
 - Video: [DB design in MS Access](#)
 - BOK: data type used in DB, field design, MS Access table creation
 - Ex.: Book - Access Tutorial 1

Evaluation of Learning



- SAM 2010 Portal

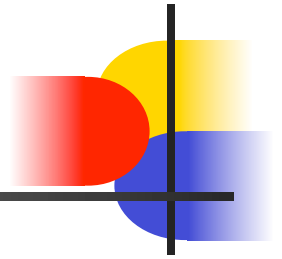
- <http://www.cengage.com/samcentral/>
- A commercial website associated with the textbook
- Provide strong support
 - <http://cengage.com/coursecare/>
- Each student buys a license to access the portal
- Automated grading of student submission (Word, Excel, Access, PowerPoint)

Implementation of Modules



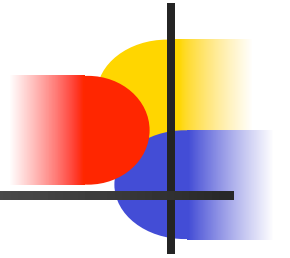
- “Microcomputer Applications in Business,” Spring 2013
 - A freshman / sophomore course
- Cyber crime investigation support is a theme used in the module development
- Video, group activities, textbook tutorials, and exercises were used
- Evaluation of learning done in SAM portal

Module Evaluation Plan



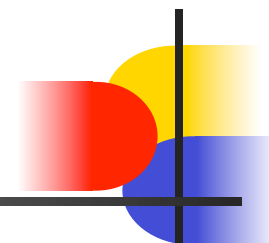
- Student learning outcomes
- Student feedback
 - Helpfulness of modules
 - Connection with BOK
 - Satisfaction
- Instructor feedback
- Community feedback

Ongoing and Future Works



- Module Packaging
- Organizing and disseminating modules
- Evaluating modules
- Community adoption

Tentative Timeline



Timeline	Task
Feb. 2013	Module Development, Implementation, and Preliminary Evaluation
Mar. 2013	Submit paper to IEEE ISI Conference
Apr. 2013	Developed ISI expert group for the CiC Project ***
Jun. 2013	Attending IEEE ISI Conference
Fall 2013	Developing and implementing additional modules by ISI group
Dec. 2013	ISI Group Meeting / ICIS / AIS SIGED
Spring 2014	Evaluation of Modules
Summer 2014	Dissemination and Promotion of Modules
Summer 2014	CiC Leader Meeting
Fall 2014 *	Continuation depends on whether extension is approved

Courses for Module Application



- Business Software Application
- Intro. to MIS
- Database Management
- Predictive Analytics
- Business Intelligence
- Information Security