The Center for Education and Research in Information Assurance and Security

6th Annual Information Security Symposium

Security in Motion

March 23-24, 2005

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Mark your calendars:
The 7th Annual CERIAS Information Security Symposium will take place on March 21-22, 2006.

Eugene Spafford, Executive Director
Elisa Bertino, Director of Research
Randy Bond, Managing Director
Jennifer Kurtz, Strategic Relations and Communications
Mary Jo Maslin, Symposium Coordinator

Welcome to the sixth annual CERIAS Information Security Symposium, and major event of Indiana Information Security Week. News events of the past month about a large-scale identity theft scam that may have compromised the personal information of 145,000 US citizens underscore the relevance of our theme, *Security in Motion*. The theme acknowledges that information assets are no longer contained within clearly defined and controlled boundaries: in our wallets, safes, file cabinets, mainframes or desktops.

Our information assets are out of the box and increasingly difficult to identify, locate, and govern as they meander through cyberspace, spawn in databases, and thrive in portable devices and storage media. Laws and regulations guiding the acceptable use of these information assets are in transition, marked frequently by uncertain and contradictory proscriptions. We unwittingly or willingly share these precious assets with those who may be unfamiliar and untrusted.

More than 120 academic researchers, industry experts, and government officials will share their perspectives through a challenging program of technology briefings, a poster session and competition, and panel discussions. Our featured speakers will continue the conversation about technology's influence on the difficult equilibrium between society's need to preserve order and reduce uncertainty, and an individual's desire to protect privacy and establish trust.

Appropriately, our first speaker, Dr. Hermann Maurer, will give a futuristic look at ubiquitous communication. Deborah Daniels will deliver the keynote address, drawing from her experience overseeing multi-million dollar research projects for the US Department of Justice. Indiana Lt. Governor Becky Skillman, featured luncheon speaker, will comment on technology from her perspective as the Chairman of Indiana's Counter-Terrorism and Security Council (C-TASC). A lively round table discussion will conclude the 2005 information security symposium.

Thank you again for joining CERIAS and our Energizing Enterprise partners, Purdue's Discovery Park and the e-Enterprise Center. Enjoy!

Jennifer

CERIAS SIXTH ANNUAL INFORMATION SECURITY SYMPOSIUM
Security in Motion - Agenda

Wednesday, March 23		
Time	**Topic**	**Location**
8:30 a.m.	Poly^2 Project	STEW 320
	File Hound - A Law Enforcement First Response Tool	STEW 314
	Exploring the Intersection of Teacher Practices, Online Learning, and Information Security	STEW 322
9:30	Ontological Support for Information Security	STEW 310
	Computer Forensics Legal Admissibility in US Courts	STEW 314
	Worm and Malware Investigation	STEW 320
	Botnets: Cyber Drone Armies of the Unscrupulous	STEW 322
10:30	Towards an Ontology of IAS Ethics	STEW 310
	Psychological Profiling and Computer Forensics: Locard's Principle in the Digital World	STEW 314
	CERIAS Security Seminar - Lockheed Martin: A View from Within	RHPH 164
11:45	Forensics of "Things"	STEW 314
12:00	Lunch on own	
1:30 - 4:00	South Ballroom, Purdue Memorial Union **CERIAS Poster Session - Eugene Spafford**	
3:00 Awards	*Note: This poster session and competition will be held jointly with the e-Enterprise Center in the South and North Ballrooms of the Purdue Memorial Union. Posters will be judged and awards presented for the best posters.*	
4:30 - 5:30	Fowler Hall, Stewart - CS Colloquium Series Speaker ***"Can We Avoid Catastrophic Failures of Computer Networks?"* (Dr. Hermann Maurer)**	
5:15 - 6:15	VIP Reception (Invitation Only)	
5:30 - 6:15	Purdue Memorial Union, Room 118 **Reception and Book Signing - Dr. Hermann Maurer**	
6:30	Fowler Hall, Stewart Center **Keynote Speaker - Deborah Daniels**	

Thursday, March 24

8:00 a.m.	Continental Breakfast - Stewart 218
8:15 - 8:30	Opening Remarks - **Eugene Spafford**
	PANEL SESSIONS - Stewart Center 218
8:30 - 10:00	**Panel 1: Shifting Assets**
10:15 - 11:45	**Panel 2: Locating Credentials: Trusted Communities and Controlled Access**
12:00 - 1:15	North Ballroom, Purdue Memorial Union **Luncheon, Speaker, Awards** Eugene Spafford, Presenter Indiana Lt. Governor Becky Skillman, Luncheon Speaker
1:30 - 3:00	**Panel 3: Positioning Public Trust: Preserve and Protect**
3:15 - 4:45	**Panel 4: Balancing Privacy: Inalienable Right or Privilege?**
5:00 - 6:00	Stewart Center, Room 214 **Roundtable Discussion** - How should we prepare the next generation of technology developers, administrators, and users so that security principles are more fully integrated? Are we closing the security gap?

Registration begins Wednesday morning and continues on Thursday. Symposium materials are at the registration desk.

CS Colloquium Speaker
Wednesday, March 23 - 4:30 p.m.
Fowler Hall, Stewart Center

"Can We Avoid Catastrophic Failures of Computer Networks?"

Dr. Hermann Maurer
Dean of Faculty of Computer Science, Graz University of Technology
Director, Institute for Hypermedia Systems, Joanneum Research, Graz, Austria

Abstract:
The number of viruses and other computer-threatening software is increasing at alarming speed. Even if we act decisively, (which we don't) the likelihood of a large-scale and long-term failure of all computers and computer networks is high. Such failure will not be caused by some super-hacker, but rather by a well-planned cyberattack. The consequences of a serious failure are catastrophic. Since our dependency on computers and computer networks is steadily increasing, consequences if such a breakdown occurs will also grow with time. In this talk we argue why a failure is likely and what it will cause if we do not take precautions that involve technical, economical, and political decisions that are fairly far-reaching.

Bio:
Born in Vienna, Austria, Maurer studied mathematics and computer science at the Universities of Vienna and Calgary, and was Assistant and later Associate Professor for Computer Science at the University of Calgary (1966-1971). He then took on various positions as full professor at a number of universities, and is now at the Graz University of Technology specializing in networked multimedia systems and their applications to knowledge management, learning, digital libraries, museums, and societal implications of new developments in computers. As a hobby, he is writing a series of Science Fiction novels. Some of his main accomplishments include: Dean of Faculty of Computer Science with about 200 researchers and 2,500 students; head of two research institutes in Graz; supervised 500 M.Sc. and 40 Ph.D. theses; founded 16 companies and a number of international conferences and journals; received two honorary doctorates; member of two academies of science and many other distinctions; and project leader of 20 multimillion-dollar projects. He has published over 600 papers and 20 books, half of which are technical. The most recent is "Learning Support Systems for Organizational Learning" (2004).

NOTE: The first 100 persons attending the talk will get a free copy of Dr. Maurer's book, "*Xperts: The Paranet*"

Keynote Speaker
Wednesday, March 23 - 6:30 p.m.
Fowler Hall, Stewart Center

Deborah J. Daniels

Deborah J. Daniels, a partner with the law firm of Krieg DeVault from 1996 to 2001, returned to Indiana in 2005 after serving as the Assistant Attorney General for the Office of Justice Programs, United States Department of Justice. She was appointed to that position by President George W. Bush and confirmed by the U.S. Senate on September 21, 2001. In her position as Assistant Attorney General, Ms. Daniels directed the primary research and grant-making arm of the Department of Justice, controlling a budget of over $4 billion. Her responsibilities included several functions directly related to the nation's response to the September 11th attack on the U.S., and the nation's ability to detect, prevent and respond to future terrorist acts.

Ms. Daniels provides counsel to the firm's public and private sector clients in matters affecting homeland security, disaster preparedness, strategic planning, leveraging of federal and state resources, and federal and state regulatory compliance.

Ms. Daniels received her B.A. from DePauw University, with honors, in 1973 and her J.D. from Indiana University School of Law, cum laude, in 1977. Ms. Daniels served as United States Attorney for the Southern District of Indiana from 1988-1993. She also served in 1992-1993 as Director of the national "Weed and Seed" initiative, a neighborhood revitalization program combining law enforcement, human services and economic development in a partner-ship between government, neighborhood residents and the private sector. She later headed the Greater Indianapolis Progress Committee, a coalition of public, private, nonprofit and neighborhood leaders that has contributed significantly to the economic health of the City of Indianapolis.

Ms. Daniels served as vice-chair of the Attorney General's Advisory Commit-tee of United States Attorneys in the early 1990s. In recognition of her apti-tude in organizing efforts with state and local law enforcement, she earned a Department of Justice award for law enforcement coordination. For her work in directing the national Weed and Seed initiative, she earned the Attorney General's Award for Excellence in Management.

Executive Director, CERIAS
Thursday, March 24 - 12:00 noon
Purdue Memorial Union
North Ballroom

Eugene Spafford

Dr. Spafford is a Fellow of the ACM, Fellow of the AAAS, Fellow of the IEEE, and is a charter recipient of the Computer Society's Golden Core award. In 2000, he was named as a CISSP, honoris causa. He was the year 2000 recipient of the NIST/NCSC National Computer Systems Security Award, generally regarded as the field's most significant honor in information security research. In 2001, he was named as one of the recipients of the "Charles B. Murphy" awards and named as a Fellow of the Purdue Teaching Academy, and in 2003 was named to the "Book of Great Teachers" – thus receiving all three of the University's highest awards for outstanding teaching. In 2001, he was elected to the ISSA Hall of Fame, and was awarded the William Hugh Murray medal of the NCISSE for his contributions to research and education in infosec. He is a 2003 recipient of the Air Force medal for Meritorious Civilian Service. In 2004, Spaf was named as the recipient of the IEEE Computer Society's Taylor Booth medal, and of the ACM SIGCAS's "Making a Difference" award.

Among his many activities, Spaf is co-chair of the ACM's U.S. Public Policy Committee, is a member of the Board of Directors of the Computing Research Association, and is a member of the President's Information Technology Advisory Committee (PITAC). He is a member of the FBI's Regional Computer Forensic Laboratory program, and of several corporate boards of advisors.

In his spare time, Spaf wonders why he has no spare time.

More information may be found at
<http://www.cerias.purdue.edu/homes/spaf.

Featured Luncheon Speaker
Thursday, March 24 - 12:20 p.m.
Purdue Memorial Union
North Ballroom

Lieutenant Governor Becky Skillman

People discover their life calling at many different ages. Lieutenant Governor Becky Skillman answered the call to public service at age 25, when voters elected her the Lawrence County Recorder. Eight years later, the voters of Lawrence County selected Skillman to serve as County Clerk. While serving in County Government, she was elected President of the Association of Indiana Counties. In that role, Skillman traveled the state and represented county officials before the legislature.

In 1992, Hoosiers in five southern Indiana counties elected Skillman to represent them in the Indiana Senate. Upon entering the Senate, Skillman set to work on issues confronting Indiana. She then led the charge to include the state's small towns and rural communities in its economic develop-ment plans. She authored plans for development in distressed counties and revitalization of downtown areas. She fought to include funding in the state's budget for rural development initiatives.

Skillman quickly rose through the ranks in the Indiana Senate, becoming the first woman elected to Senate Republican leadership. She held the third high-est position in the Senate as Majority Caucus Chair, when Governor Daniels asked her to become his running mate.

Many people inside and outside of the State Capitol have taken notice of Skillman's work. In 1995 the Small Business Council bestowed upon Skillman its "Champion of Small Business" award. The Indiana Association of Area Agencies on Aging named Skillman the "Outstanding Elected Official of 2000." In 2002, the Indiana Library Federation named Skillman its "Legislator of the Year." In 2003, the Indiana Rural Health Association gave Skillman its "Distinguished Public Policy Award."

Skillman's work extends beyond the State Capitol. She feels very strongly about encouraging Hoosier women to consider public service. Skillman is an Honorary Governor of the Lugar Excellence in Public Service Series and served as the Senate advisor to Hoosier Girls' State.

As Lt. Governor, Skillman is chair of the Indiana Counter-Terrorism and Security Council.

Conference in Detail

Research Presentations
Wednesday, March 23

Session 1: Stewart Center - Room 320, 8:30 a.m.
Poly^2 Project
Keith Watson

ABSTRACT: The Poly^2 Project is an information assurance research project in security architecture. The goal of this project is to secure critical network services and provide reliability and redundancy for these services. For the initial design, we applied good security design principles to achieve these goals. The design incorporates separation of network services onto multiple computing systems and strict control of the information flow between the systems and networks. This allows us to build reliability and redundancy into the platform while increasing overall trust. Additionally, we create minimized, customized operating systems tailored for the applications of each system. The operating system will only provide the minimum set of needed services and resources to support a specific application or network service. This customization will increase the difficulty of attacking and compromising the system. To manage the individual systems and services in this design, a platform management system will be created to allow administrators to provision new and additional network services quickly. This presentation will highlight the security design principles incorporated into the overall design of the system, as well as progress made to this date.

Session 2: Stewart Center - Room 314, 8:30 a.m.
File Hound – A Law Enforcement First Response Tool
Blair Gillam

ABSTRACT: This presentation is on the development and results from File Hound – a software program developed at Purdue University for law enforcement "First Responders." It allows law enforcement officials with minimal training to find images on a suspect's hard drive. File Hound is currently used by over 14 law enforcement agencies around the State of Indiana. It has been used in cases ranging from child pornography to fraud. A live demonstration of the program along with a question and answer session will follow the presentation.

Session 3: Stewart Center - Room 322, 8:30 a.m.
Exploring the Intersection of Teacher Practices, Online Learning, and Information Security
Matt Rose, Janet Alsup, Jennifer C. Richardson, Llisa Schade Eckert

ABSTRACT: According to the *Theoretical Models and Processes of Reading* (Leu, et al., 2004), a scholarly compilation of literacy research, there is a lack of research about the intersections of technology, in particular the role of electronic communication, and literacy learning in K-12 curricula. Moreover, there are obvious ethical, rhetorical, and philosophical issues to consider when students engage in electronic communication, which often are not considered by educators. As such, this project seeks to explore the following questions (1) The extent to which these electronic communication tools enhance (or hinder) the literacy learning of adolescents in multiple areas, as measured through standardized tests; (2) The level of familiarity or comfort felt by teachers when integrating such online applications into exist-ing literacy curricula; and (3) What are teachers' knowledge and practices related to information assurance and security issues.

Session 4: Stewart Center - Room 310, 9:30 a.m.
Ontological Support for Information Security
Victor Raskin

ABSTRACT: As part of CERIAS's pioneering effort in applying NLP/ Ontological Semantics to information assurance (IA), the extension of its general 6,000-concept ontology to specific domains has served a number of useful purposes such as unifying terminology, clarifying the relations among various major concepts, defining the basic set of properties, etc. What follows from this research is the necessity of ontologization for any number of projects involving the modeling, formalization, simulation, and regulation of information assurance systems, processes, and applications. The paper briefly introduces the basic notions of ontological semantics, reviews its benefits, and outlines its IA implementations.

Session 5: Stewart Center, Room 314, 9:30 a.m.
Computer Forensics Legal Admissibility in U.S. Courts
Matt Meyers

ABSTRACT: Given the dramatic increase in evidence of a digital or electronic nature in cases brought before the U.S. Court System, there is a growing concern over its admissibility. The question becomes whether the tools used to extract and analyze the digital evidence meet the requirements of the U.S. Court Systems for scientific evidence.

Session 6: Stewart Center - Room 320, 9:30 a.m.
Enabling Worm and Malware Investigation Using Virtualization
Xuxian Jiang, Dongyan Xu

ABSTRACT: We present an integrated Internet worm capture and analysis platform based on our machine and network virtualization tech-niques. The front-end of the platform is called "Collapsar". It deploys a

number of "decoys" in different locations of the network to "attract" attacks launched by humans or by malware (such as worms and spywares), re-direct the attack traffic to a safe and confined analysis center, and record detailed steps and actions during the attacks and exploitations.

The back-end of the platform is a virtual playground, called "vGround", for worm behavior investigations. A vGround is an all-software virtual environment dynamically created on top of a physical infrastructure. A vGround contains realistic end-hosts and network entities, all realized as virtual machines (VMs) and confined in a virtual network (VN). It provides a safe and convenient virtual environment to unleash and observe real-world Internet worms and to test anti-worm mechanisms.

Session 7: Stewart Center - Room 322, 9:30 a.m.
Botnets: Cyber Drone Armies of the Unscrupulous
Sanjay Goel, SUNY at Albany

ABSTRACT: Botnets or networks of zombie machines are emerging as a major threat to computer security. These networks usually consist of nodes that are inducted into the network without the cognizance of the node owners. Botnets are usually created by exploitation of Internet Relay Chat (IRC). The participants in a botnet are involuntarily connected to an IRC channel and then controlled using this channel. Bots are usually created by propagation of pathogens (viruses and worms) or via installation of Trojans. The bot controller is the owner of the channel that connects to the channel and sends commands to the bots on the network. These bots then execute the commands at the will of the controller. These commands are usually malicious, such as, spreading viruses and worms on the network to induct more nodes into the botnet or DDOS attacks on a network.

The subterfuge employed by botnets in propagation and the resilience of the bot controller make it difficult for detection and elimination. Once a botnet is operational, there are network forensic techniques that can be used to identify bots. Anomalies in traffic patterns on various ports can be used to track down the nodes that are a part of the network. Concerted effort by universities and ISPs in observing network traffic and shutting down affected machines is currently the best approach for managing the bot menace.

Session 8: Stewart Center - Room 310, 10:30 a.m.
Towards an Ontology of IAS Ethics
Sam Liles, Jim Chen, Jay Ekstrom

ABSTRACT: The research reported here is a part of a larger effort, pioneered by CERIAS and supported first by Eli Lilly and currently by NSF, to create a rich ontology of any new domain in IAS. An output of the NSF Faculty

Development Workshop on Social and Ethical Issues in Information Assurance and Security, conducted by CERIAS in San Diego in February 2005, this paper deals with the notoriously "soft" domain of ethics, where there is no rigorously defined or mutually agreed-upon terminology and where, therefore, the unifying, clarifying, formalizing, and disambiguating effect of ontological semantics is particularly necessary. On a few diverse examples, the paper demonstrates how ontological concepts for the domain are acquired and what is at stake for every decision.

Session 9: Stewart Center - Room 314, 10:30 a.m.
Psychological Profiling and Computer Forensics: Locard's Principle in the Digital World
Dr. Marcus K. Rogers and Kate Seigfried

ABSTRACT: The current project examiines the need to extend psychological crime scene analysis from its current supportive role in physical crime scene analysis, to an identical role in digital and cybercrime scenes. The fundamentals of crime scene analysis are discussed and a focus on the ability of psychological cybercrime scene analysis to answer the FBI's critical elements is presented. A model illustrating the analogous physical and cybercrime scene elements is provided. The importance of cyber victimology in profiling and target hardening is also briefly examined, as is the importance of not being fearful of the seeming uniqueness of computer crime scenes.

Special Session: Robert E. Heine Pharmacy Building*, 575 Stadium Mall Drive, Room 164, 10:30 a.m.
CERIAS Security Seminar - Lockheed Martin: A View from Within
Dr. Kate Cherry and Wendy Hamilton

ABSTRACT: Lockheed Martin realizes that their newly hired college graduates are an investment in Lockheed Martin's future. As a result the Company looks out for their new college hires. Dr. Cherry will talk about several programs dedicated to enhancing the work experience of newly hired and vested college graduates. For instance, one program focuses on new technical graduates right out of college. Another program focuses on new graduates already thinking about a management track. A third program focuses on college graduates that have been around 3-5 years and are serious about focusing on a leadership role. Finally, Dr. Hamilton and Dr. Cherry will dish out relevant insights they gained as they forged ahead in their careers in the corporate world.

Session 10: Stewart Center - Room 314, 11:45 a.m.
Forensics of "Things"
Dr. Edward J. Delp

ABSTRACT: Forensic characterization of physical objects and sensors.

Walking Directions from Stewart Center to Pharmacy Building:
> *Exit Stewart Center (via west door facing Memorial Mall)*
> *Head north toward the fountain at Purdue Mall*
> *(you'll pass the bell tower on your left)*
> *Veer left around the fountain (in front of Hovde Hall)*
> *Turn left on Stadium Mall Dr.*
> *The Pharmacy Building is the third building on the left.*

PANEL DISCUSSIONS
Thursday, March 24
Stewart Center, Room 218

8:30 - 10:00   PANEL SESSION 1
SHIFTING ASSETS
What issues must be addressed in managing asset assurance in fluid, complex environments?

MODERATOR: Keith Watson, Research Engineer, CERIAS, Purdue University
PANELISTS:
Sanjay Goel, Assistant Professor, School of Business, SUNY at Albany
Steve Lodin, Director of Product IT System Integration, Roche Diagnostics North America
John Salomon, Security Consultant, Chakraborty Software

10:15 - 11:45   PANEL SESSION 2
LOCATING CREDENTIALS: TRUSTED COMMUNITIES AND CONTROLLED ACCESS
What approaches can be used to identify who can be trusted, to what degree, and for what purpose?

MODERATOR: Eugene Spafford, Executive Director, CERIAS, Purdue University
PANELISTS:
Ninghui Li, Research Scientist, CERIAS, Purdue University
Stephen Elliott, Assistant Professor, Industrial Technology, Purdue University
Leszek Lilien, RAID Lab, Computer Sciences, Purdue University (invited)

1:30 - 3:00   PANEL SESSION 3
POSITIONING PUBLIC TRUST: PRESERVE AND PROTECT
How can balance be maintained between mission (efficient delivery of citizen services and common defense) and principles (such as, privacy and due process)?

MODERATOR: Roland Cole, Counsel in the Intellectual Property Department and Business Technology Group, Barnes & Thornburg
PANELISTS:
Deborah Daniels, Partner, Krieg Devault
Earl Morgan, Director, Indiana's Counter-Terrorism and Security Council (C-TASC)
Fred Cate, Director of CACR, Indiana University

PANEL DISCUSSIONS (cont'd)
Thursday, March 24
Stewart Center, Room 218

3:15 - 4:45   PANEL SESSION 4
BALANCING PRIVACY: INALIENABLE RIGHT OR PRIVILEGE?
How can the tension between the desire to preserve privacy be resolved with the ubiquitous deployment of computing and sensing technologies?

MODERATOR: Elisa Bertino, Professor in Computer Sciences and Research Director, CERIAS, Purdue University
PANELISTS:
James G. Anderson, Professor of Sociology, Purdue University
Annie Anton, Associate Professor of Software Engineering, North Carolina State University
Chris Clifton, Associate Professor, Computer Sciences, Purdue University

Roundtable Discussion
Stewart Center, Room 214

5:00 - 6:00 ROUNDTABLE
NEXT GENERATION
How should we prepare the next generation of technology developers, administrators, and users so that security principles are more fully integrated? Are we closing the security gap?

MODERATOR: Melissa Dark, Associate Professor, Computer Technology, and Assistant Dean, School of Technology, CERIAS, Purdue University
PARTICIPANTS:
Speakers and Panelists

POSTER SESSION
AREAS OF INTEREST

Assurable Software and Architectures

This area includes tools and methods for building software artifacts, servers, and networks that are resistant to attacks and failures. This includes research into vulnerability assessment and identification, programming languages and tools for secure programming, mobile code and "sandboxes," proof-carrying systems, trusted embedded systems, resilient server architectures, protection against malicious software, dynamic reconfiguration of systems, hardware architecture design, fault-tolerance, code tamperproofing, and penetration testing. Research into more secure operating systems and database systems falls in this area, as does research into better human-computer interfaces for security (HCI).

Cryptology and Rights Management

Controlling information from being read or altered by others, preserving marks of ownership and origin, and breaking the code of adversaries are all of interest in information security. CERIAS expertise and interest includes encryption, number theoretic foundations, cryptanalysis, optical encryption, watermarking (of images, audio, movies), research in natural language digital rights protection including natural language watermarking and tamperproofing, automated security (de)classification of documents, cryptographic protocols, cybercash, trusted voting and bidding protocols, and intellectual property laws.

Enclave and Network Security

Security becomes more complex when participating entities are physically separated from the current location; knowing who and what is communicating from a remote location complicates security decisions. Research in this area includes wireless computing, communication protocol design and verification, agent computation, quality-of-service protection, firewall design and testing, SCADA security, dynamic and protective routing, security for grid computing, and sensor net security.

Identification, Authentication, and Privacy

There is a tension between increased confidence and granularity of authorization provided by better identification of on-line entities, and with the need to protect the privacy rights of individuals and organizations. This area includes research in role-based access control (RBAC), biometrics, pervasive surveillance ("Panoptic Effects"), privacy-protecting transformations of data, privacy-protecting data mining methods, privacy regulation (e.g., HIPAA and COPPA), oblivious multiparty computation, and trusted proxy research.

Incident Detection, Response, and Investigation

Systems are attacked, and sometimes attacks succeed. This area of our expertise includes intrusion and misuse detection, integrity management issues, audit and logging analysis, sensor and alarm design, strike-back mechanisms, dynamic reconfiguration, honeypots and "jails," cyberforensics, hacker profiling, deception and psychological operations, information warfare, cyberterrorism, criminal law and computer crime.

Risk Management, Policies, and Laws

This area includes tools and methods for understanding the context of security, and how to best allocate resources for protection of assets. This includes research into risk assessment and mitigation methodologies, policy development, the role of law and social pressure on security, economic aspects of security, cross-cultural issues governing security, cyberethics, simulation and modeling of security, and policy languages and proofs.

Security Awareness, Education, and Training

How do we educate users, producers, designers, and purchasers of IT to choose wisely when it comes to security? CERIAS personnel examine issues of awareness methods, on-line security education, security certification issues, security curriculum design, the role of K-12 education, risk communication, community awareness and standards, cross-cultural issues of security, organizational structure and communication of risk, and public perceptions of IT security.

Trusted Social and Human Interactions

How does IT change our interactions, and how can more trustworthy IT change them further? This includes studies of on-line trust, e-commerce (business-to-business and business-to-consumer), digital government services, e-conferencing, on-line personae and anonymity, online news, on-line research and the ephemeral nature of information, online propaganda, and spam.

POSTER SUBMISSIONS (By Research Area)

Assurable Software and Architectures

Adaptive Intrusion Response Using Attack Graphs in an E-Commerce Environment
Yu-Sung Wu, Bingrui Foo, Yu-Chun Mao
yswu@purdue.edu

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Convenience and Security in the Safely Contained Experimentation Facility, Reassure
Pascal Meunier, Michael Yang
yang16@purdue.edu

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Poly^2 Project
Keith Watson, Michael Ambrust, Jay Geugelbach
kaw@cerias.purdue.edu

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ReAssure: Virtual Imaging Instrument for Logically Destructive Experiments
Pascal Meunier
pmeunier@purdue.edu

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Assurable Softwares and Architectures (cont.)

Role-Based Access Control for Group Communication System
Jacques Thomas, Cristina Nita-Rotaru, Ninghui Li
jthomas@cs.purdue.edu

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Security-Based Testing of Access Control Systems
Ammar Masood, Rafae Bhatti, Adifya Mathur, Arif Ghafoor
ammar@purdue.edu

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Uncheatable Grid Computing and Its Application in Drug Discovery
Mummoorthy Murugesan, Du (Kevin) Wenliang
mmuruges@cs.purdue.edu

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Updating XML Documents in Distributed and Cooperative Systems
Yunhua Koglin, Giovanni Mella, Elisa Bertino, Elena Ferrari
luy@cs.purdue.edu

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Cryptology and Rights Management

Ensuring Correctness Over Untrusted Private Databases

Sarvjeet Singh, Sunil Prabhakar

sarvjeet@purdue.edu

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Enclave and Network Security

An Adaptive Matched Filter-Based Approach for DILON

Ryan Gerdes

rgerdes@iastate.edu

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Analysis and Insights into Denial of Service Attacks on 802.11

Cristina Nita-Rotaru

crisn@cs.purdue.edu

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Design and Implementation of Intrusion Detection System in Wireless Ad Hoc Networks

Xia Wang

jxiawang@iastate.edu

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Enclave and Network Security (cont.)

Evaluation Methodologies for Internet Security Technology (EMIST)
Roman Chertov, James Early, Abdallah Khreishah, Pankaj Kumar, Sonia Fahmy, Ness Shroff, Eugene Spafford
fahmy@cs.purdue.edu

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Global Purification of Internet Streams
Kihong Park, Bhagya Bethala, Hyojeong Kim, Ali Selcuk, Wonjun Lee
bbethala@cs.purdue.edu

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Intrusion Evidence Correlation for Multi-Stage Attack Scenario Recognition
Wei Wang
weiwang@iastate.edu

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Janus: Towards Secure and Malicious-Resilient Routing in Hybrid Wireless Networks
Cristina Nita-Rotaru
crisn@cs.purdue.edu

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Enclave and Network Security (cont.)

Monitor Placement Problem in Advance Attack Attribution
Yongping Tang
tangyp@iastate.edu

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Scalability, Accountability, and Instant Information Access for Network-Centric Warfare
Cristina Nita-Rotaru
crisn@cs.purdue.edu

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Scalable Infrastructure Protection and Performance Evaluation in Power-Law Networks
Kihong Park, Hyojeong Kim, Ali Selcuk, Bhagya Bethala, Humayun Khan
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Traceback-Assisted Mitigation in Wireline/Wireless Networks
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Enclave and Network Security (cont.)

Wormhole: A Gigabit Worm Filter Using Network Processor Technology
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Identification, Authentication, and Privacy

A GTRBAC-Based System for Workflow Composition and Management
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An Analysis of Privacy and Security Information Provided and Elicited by Different Types of Web Sites
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Biometric Feasibility Study: Hand Geometry at the Recreational Sports Center
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Identification, Authentication, and Privacy (cont.)

Digital Identity Management and Trust Negotiation
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Digital Identity Management in Ontological Semantics: Methodology and Practice of Domain Representation
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Ontological Semantics Support for Handling Privacy Policies
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Privacy-Preserving Distributed k-Anonymity
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Identification, Authentication, and Privacy (cont.)

Protecting Consumer Privacy in Reusable Digital Devices
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Purpose-Based Access Control for Privacy Protection
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Querying Private Data in Moving-Object Environment
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Securing the Manufacturing Environment Using Biometrics
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Identification, Authentication, and Privacy (cont.)

Security and Privacy in Healthcare Environments
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SERAT: Secure Role-Mapping Technique for Decentralized Secure Interoperability
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Translation-Based Steganography
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VNC's, Web Portals, Biometrics, and the Verification of Distance Education Students
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Identification, Authentication, and Privacy (cont.)

Wireless Encryption Practices: Social Capital Factors and Diffusion of Innovation
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Incident Detection, Response, and Investigation

Causality-Based Intrusion Analysis
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Foundations for Digital Investigations
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A Holistic Approach for Detecting System Intrusions
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Incident Detection, Response, and Investigation (cont.)

iPod Forensics
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Mitigating Phishing Attacks
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Psychological Profiling and Computer Forensics: Locard's Principle in the Digital World
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The Trojan Horse Defense in Cybercrime Cases
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Incident Detection, Response, and Investigation (cont.)

Using Process Labels to Obtain Forensic and Traceback Information
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Virtual Playgrounds for Worm Behavior Investigation
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Risk Management, Policies, and Laws

Open Source vs. Proprietary Software: Vulnerabilities and Patch Response
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Securing the National Plant Diagnostic Network
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Security Awareness, Education, and Training

CERIAS K-12 Outreach
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Creating Awareness of Computer Security Concepts Using Multimedia Teaching Aids
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Internship "Living Lab" Projects
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National Capacity Building
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Security Awareness, Education, and Training (cont.)

Network Security Certificate Program
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An Object-Oriented Multimedia System for Delivering K-12 Information Security
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Open Seminar
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Refactoring Secure Programming Classes
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Teacher Practices, Online Learning, and Information Security
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Security Awareness, Education, and Training (cont.)

Teaching Hospital: Reaching the Masses through Distance Delivery
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Xen and the Art of Information Assurance Education
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Trusted Social and Human Interactions

Social Engineering Defense Architecture
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Trust Framework for P2P Networks using Peer Profile-Based Anomaly Technique
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BIOGRAPHIES

Janet Alsup is an Assistant Professor of English Education with a joint appointment in the School of Liberal Arts and the School of Education. Her specialties are teacher education and professional development, the teaching of composition and literature in secondary schools, critical pedagogy, adolescent literacies, and qualitative and narrative inquiry. Dr. Alsup is a member of the National Council of Teachers of English, the International Reading Association, and the Midwest Modern Language Association.

Her recent publications appear in the Journal of Adolescent and Adult Literacy, Pedagogy: Critical Approaches to Teaching Literature, Language, Composition, and Culture and English Education, and she regularly presents at the National Council of Teachers of English Convention (NCTE) and the Conference on College Composition and Communication (CCCC). She recently completed a book titled, *But Will It Work with Real Students? Scenarios for Teaching Secondary English Language Arts,* co-authored with Professor Jonathan Bush, that uses real teachers' stories to explore pedagogical theories and methods. This book is available as of November, 2003 from NCTE. Currently, she is working on a second book, tentatively titled, *Speaking From the Borderlands: Exploring Genres of Teacher Identity Discourse*, that describes the results of a longitudinal research project investigating the professional identity development of pre-service English teachers.

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James G. Anderson is a Professor in the Department of Sociology & Anthropology at Purdue University. Professor Anderson earned his B.E.S. degree in Chemical Engineering, M.S.E. degree in Operations Research and Industrial Engineering, M.A.T. degree in Chemistry and Mathematics, and Ph.D. in Education and Sociology at John Hopkins University. He is the former Director of the Division of Engineering of the Evening College of John Hopkins University and Research Professor of Educational Administration at New Mexico State University.

Professor Anderson's primary research has involved the application of social science theory and research methods to better understand and improve the delivery of health services. Theory and methods include: social network theory, structural equation modeling, and computer simulation. He has edited two books that address the barriers to and organizational impact of computer-based information systems and co-authored a book on social and ethical issues related to the use of the Internet in healthcare. His work in this area has been recognized by outstanding research awards by the American Association for Medical Systems and Informatics (1983), the Association

of American Medical Colleges (1988), the Alliance for Continuing Medical Education (1995), and the American Medical Informatics Association (1997). He has also been a member of international delegations on medical informatics to China (1988), Hungary (1995), and Russia (1995).

Professor Anderson serves as the Associate Vice President for Simulation in Health Care of the Society for Computer Simulation International. In this capacity he has organized, chaired, and edited the proceedings of 14 international conferences on simulation in health care and the medical sciences. In recognition of his efforts, he received a certificate of appreciation from the Society for Computer Simulation International (1993). Currently he is the past Chair of the Sociology of Computer section of the American Sociological Association, past Chair of the Ethical, Legal and Social Issues Working Group and Chair of the Quality Improvement Working Group of the American Medical Informatics Association. In 2003, he was elected a Fellow of the American College of Medical Informatics.

While at Purdue he developed a series of courses that complement his research interests. These courses include: The Human Side of Medicine, The Social Organization of Health Care in the United States, Comparative Healthcare, Linear Structural Equation Models, and Computer Applications of Sociology.

Professor Anderson's service activities include membership on the Medical Technology Committee of the Indiana Business Modernization and Technology Corporation, a state agency that provides seed money for start-up companies in Indiana. In recognition of his service, he received the Governor's Award for Outstanding Contributions to the State of Indiana (1987). More recently, he is a co-principal investigator and co-director of the Rural Center for AIDS/STD Prevention. This is a joint center between Purdue, Indiana, and Texas A&M Universities that is developing new interventions to prevent the spread of HIV/AIDS.

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Annie Antón is an Associate Professor of Software Engineering in the Computer Science Department of the College of Engineering at North Carolina State University (NCSU), where she is a member of the NCSU Cyber Defense Lab. Her research focuses on methods and tools to support the specification of complete, correct behavior of software systems used in environments that pose risks of loss as a consequence of failures and misuse. This includes Web-based and e-commerce systems in which the security of personal and private information is particularly vulnerable. To this end, she has developed

a leadership role in research, education, and outreach with her three current initiatives.

Antón is the founder and director of ThePrivacyPlace.org, a research group of students and faculty at NCSU, Georgia Tech, Purdue University, and the University of Lugano. She is leading this group in the development of technology to assist practitioners and policy makers in meeting the challenge of eliciting and expressing policies (a form of requirements). These tools help ensure that privacy policies are aligned with the software systems that they govern. One such tool to support the discovery, elaboration and management of system use scenarios for the validation of software requirements and policies, is SMaRT (Scenario Management and Requirements Tool). Antón is a member of the Transnational Digital Government project team.

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Elisa Bertino is a professor in Computer Science and Research Director at CERIAS. Her research interests cover many areas in the fields of information security and database systems. Her research combines both theoretical and practical aspects, addressing as well applications on a number of domains, such as medicine and humanities. Current research includes: access control systems, secure publishing techniques and secure broadcast for XML data; advanced RBAC models and foundations of access control models; trust negotiation languages and privacy; data mining and security; multi-strategy filtering systems for Web pages and sites; security for grid computing systems; integration of virtual reality techniques and databases; geographical information systems (GIS) and spatial databases.

Professor Bertino is a co-editor in chief of the *VLDB Journal* and serves on the editorial boards of several journals, including the *ACM Transactions on Information and System Security, the IEEE Security & Privacy Magazine*, and the *International Journal of Information Security*. She served as program chair of 7th ACM Symposium on Access Control Models and Technologies (SACMAT02), and is currently serving as program chair of the 9th International Conference on Extending Database Technology Conference (EDBT 2004). Professor Bertino is a Fellow of the Institute of Electrical and Electronics Engineers and has been recently elected ACM Fellow. She also received the IEEE Computer Society Technical Achievement award in 2002 for "For outstanding contributions to database systems and database security and advanced data management systems".

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Fred Cate is director of the Indiana University Center for Applied Cyberse-curity Research (CACR) and faculty advisor to the Federal Communications Law Journal. He specializes in information law issues, particularly in the context of digital networks. He is a frequent speaker and has testified before Congress, directed the Electronic Information Privacy and Commerce Study for the Brookings Institution, and chaired many academic and professional committees relating to these issues. He is the author of many articles and monographs, including "The Internet and the First Amendment," "Privacy in the Information Age," and "Privacy in Perspective," and writes widely for the popular press.

Professor Cate has appeared on CNN, PBS, and many local television and radio programs. He received his A.B. and J.D. from Stanford University, where he was book review editor for the Stanford Law Review. Additional experience includes: Associate, Debevoise & Plimpton, Washington, D.C. (1987-90); Senior Policy Advisor, Hunton & Williams Center for Information Policy Leader-ship; Visiting Scholar, American Enterprise Institute. He is a member of Phi Beta Kappa.

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Jim Q. Chen is a faculty member at the University of Maryland, University College Graduate School. He received his Ph.D. from the University of Mary-land, College Park in 1996.
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Chris Clifton is Associate Professor, Computer Sciences. He is Principal Scientist for the MITRE Corporation and works on challenges posed by novel uses of data mining technology, particularly privacy-preserving data mining. Other data mining interests include mining text, techniques applied to the in-teroperation of heterogeneous information sources, and information security. He also works on database support for widely distributed and autonomously controlled information, particularly issues such as supporting fine-grained access control.

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Kate Cherry of Lockheed Martin is the Chief Security Architect for a large Intelligence Community program, focused on bringing together disconnected security functionality into a cohesive security infrastructure.

Dr. Cherry's first responsibility is to unify the IS&S Community of Practice for IA. She developed a plan to do this by leveraging, synthesizing and extrapolat-ing on-going efforts. She created and led a group of IA Leads (managers and

chief technologists) to help develop the Communities of Practice. Her efforts also support IA Internal Research and Development, plus help develop IA Commercial Research and Development and customer relationships to that end. She is responsible for the IA technology strategy plan.

Dr. Cherry served as Senior Computer Scientist with the CIA from 1994-2000 and served on the President's Office of Science and Technology Panel's Interagency Working Group for Critical Infrastructure Protection R&D. She was Program Director of INFOSEC Research for DCI's Advanced Research & Development Activity. She planned, secured funding, and led information technology research projects.

Roland J. Cole is of counsel in the Intellectual Property Department and the Business Technology Group at Barnes & Thornburg, concentrating primarily in computer law and complicated transactions. He is also the legal editor for the Indiana Computer Society newsletter and teaches at Indiana University School of Law - Indianapolis.

Dr. Cole led research in energy and economic development policy at Battelle Seattle Research Center for nine years. He then spent five years at a Seattle law firm doing commercial transactions working with lawyers in 27 different states. He was then general counsel of the Industrial Technology Institute (ITI) in Michigan for four years.

Since August 1994, he has been Executive Director of the Software Patent Institute (SPI), a nonprofit effort sponsored by the software industry, that is building a database of software technology as "prior art" for software developers, patent counsel, and the USPTO. In December 1997, he moved to part-time at SPI and became of counsel to Shughart Thomson & Kilroy, a large law firm in Kansas City, Missouri, where he led the Year 2000 Legal Action Team and was a member of the Intellectual Property Practice Group until June 2000.

Dr. Cole was a co-founder and the first president of the Association of Personal Computer User Groups, an organization which has had more than 400 members groups around the world. He is co-author of one published software program and two books, one on small business and one on organized crime, and numerous articles and presentations.

Dr. Cole received four degrees from Harvard University: A.B. in Economics (magna cum laude, 1970), M.P.P. in Public Policy (1972), Ph.D. in Public Policy (1975), and J.D. (1975). He was a U.S. Department of Housing and Development Urban Fellow 1970-71.

Dr. Cole is admitted to practice in Michigan and Missouri.

Melissa Dark is an Associate Professor, Computer Technology, and Assistant Dean, School of Technology. Professor Dark has led regional and national faculty and curriculum development projects to improve the capacity of our educational infrastructure to provide programs and articulate a common body of knowledge in new and emerging areas, such as Information Assurance (IA). She is also leading a faculty development project that will train faculty in IA so that they can start IA educational programs at their home institutions. She is guiding the development of an online digital repository of educational materials in information assurance and security for educators nationwide, in addition to multimedia information security training products designed for business and industry.

Her publications include "Report on Information Assurance Curriculum Development" (with J. Davis) for the National Colloquium for Information Systems Security Education Proceedings (June, 2002) and "A Profile of Information Security Training Needs on University Campuses" contained in the EduCause Mid-Atlantic Regional Conference Proceedings (2001).

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Edward J. Delp is a Professor of Electrical and Computer Engineering and Professor of Biomedical Engineering in the School of Electrical and Computer Engineering at Purdue University.

He is a Fellow of the Institute of Electrical and Electronics Engineers (IEEE), a Fellow of the SPIE, a Fellow of the Society for Imaging Science and Technology (IS&T), and recipient of a 1990 Fulbright Fellowship, in addition to other honors. In 2000, he was selected a Distinguished Lecturer of the IEEE Signal Processing Society.

Dr. Delp is a consultant for various companies and government agencies in the areas of signal and image processing, robot vision, pattern recognition, document protection and data hiding, and secure communications. He has published and presented more than 250 papers, including invited papers for Proceedings of the IEEE on watermarking and keynote addresses on multimedia security.

His research interests include image and video compression and forensics, document forensic analysis, rf transmitter forensics, multimedia security, error-resilient cryptography, medical imaging, multimedia systems, communication and information theory.

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Lisa Schade Eckert is an Assistant Professor of English Education at Purdue University. Her areas of interest include theory and pedogogy in teaching literature and composition, literary theory, critical literacy, theory and practice of technology in education, and history of English as a subject.

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Joseph. J. Ekstrom is on the faculty of the School of Technology at Brigham Young University. He has 30 years experience in software development and senior management. His research interests include network and systems management, distributed computing, system modeling and architecture, system development, and IT curriculum and development.

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Stephen Elliot is an Assistant Professor in Industrial Technology, CERIAS. He earned his B.S. in Political Science from Iowa State University, M.S. in Transport Planning and Management from University of Westminster (London), Ph.D. in Industrial Technology/Automatic Identification & Data Capture from Purdue University. He is an Executive Board Member of INCITS, Biometrics Interoperability, Performance, and Assurance Working Group,Testing Ad Hoc Committee (NIST & Biometrics Consortium), Treasurer of Epsilon Pi Tau National Honorary for Technology, IEEE, National Association Industrial Technology, American Society of Transportation and Logistics, Institute of Transport and Logistics.

Dr. Elliot's key areas are in Trusted Social and Human Interaction Identification, Authentication, and Privacy. His research interests include Biometrics, Signature Verification, Mobile Computing, Electronic and Mobile Commerce Logistics and Supply Chain Management.

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Blair Gillam is a senior at Purdue University majoring in Computer Technology. He plans to attend Graduate School at Purdue University starting in Fall, 2005. He is currently the Cyber Forensics Lab Coordinator and has been actively involved in the development of File Hound, a software program for law enforcement "First Responders," since its creation in May 2004.

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Sanjay Goel is an assistant professor in the School of Business at the University at Albany, SUNY. He is also the Director of Research at the Center for Information Forensics and Assurance at the University. Prior to joining the University he worked at the General Electric Global Research Center. Dr. Goel received his Ph.D. in Mechanical Engineering in 1999 from Rensselaer Polytechnic Institute.

His current research interests are self-organized systems for modeling of autonomous computer security systems using biological paradigms of immune systems, epidemiology and RNA interference. He also actively works on distributed service-based computing, network security and active networks. His research includes use of machine learning algorithms to develop self-learning adaptive optimization strategies and use of information theoretic approaches for classification of data for use in applications such as portfolio analysis and information assurance. He has several publications in leading conferences and journals.

Dr. Goel teaches several classes including Computer Networking & Security, Information Security Risk Analysis, Enterprise Application Development, Database Design and Java Language Programming

Jim Goldman is Professor and Associate Department Head for Telecommunications & Networking Technology. As the Associate Department Head, he is responsible for curriculum and facilities development in support of the B.S. degree program in Telecommunications & Networking Technology. Professor Goldman has published several texts in the data communications field, is Executive Vice

President of InfoComm Systems, Inc., and is both a Certified Information Systems Security Professional (CISSP) and a Microsoft Certified Systems Engineer (MCSE). He received his M.B.A. in Management Information Systems, New Hampshire College, 1984. M.Ed. in Science Education, Boston University, 1978. B.S. in Math & Physics, University of Massachusetts, 1975.

His research interests include core competencies within the security field including security architecture development, security risk assessment and analysis, and security audit.

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Wendy Hamilton received her Ph.D in mathematics in 1998 from the University of California at San Diego in the field of number theory. She started her career investigating elliptic curve cryptography, image filtering algorithms, and networking protocols for Spawar Systems Center San Diego. Since coming to Lockheed Martin by way of the acquisition of ORINCON she has focused

on technologies related to information assurance including prediction, insider threat detection, and eigenspectral analysis of networks. Dr. Hamilton has served as the scientific advisor for the Information Assurance Campaign to develop and fund research within Lockheed Martin, and is currently serving as Deputy Chief Technologist of Information Assurance, under Dr. Kate Cherry, for the Information Systems and Solutions Division of Lockheed Martin.

Leszek Lilien has oversight responsibilities for the RAID Lab in Computer Sciences at Purdue. He is a consultant for university and business projects. Research interests include computer privacy and security in pervasive distributed computing systems, privacy-preserving data dissemination, and the role of trust in open computing environments.

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Sam Liles is an assistant professor in the Computer Information Systems & Information Technology Department at Purdue University Calumet located in Hammond, Indiana. His primary area of expertise is networking and information assurance and security, and his research interests are in the areas of information assurance ethics and network forensics.

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Steve Lodin is Director of Product IT System Integration at Roche Diagnostics North America located in Indianapolis, Indiana. He has been working in IT security and IT infrastructure for over 10 years and has been CISSP since 1998. His current focus is enhancing security of their own products as well as providing security services to their customers.

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Matthew Meyers is a SFS graduate student pursuing his Interdisciplinary Master of Science in Information Security at Purdue University. Matthew has published in the *International Journal of Digital Evidence* and presented at the International Federation for Information Processing Digital Forensics Working Group.

Earl S. Morgan serves as the Director of Indiana's Counter-Terrorism and Security Council (CTASC). The council serves as Indiana's coordinating agency for the state's homeland security efforts. In addition, CTASC serves as the state's liaison to the U.S. Department of Homeland Security.

After receiving a Bachelor of Arts in Political Science from Fort Valley State

University in Fort Valley, Georgia in 1979, Morgan was commissioned as an officer in 1979 in the U.S. Army Infantry.

Morgan completed both Infantry Officer Basic and Advance Courses in the Army. After a tour of duty in Germany, Morgan reported to Fort Leavenworth, Kansas where he completed executive training in logistics, planning, operations, and tactics. His next assignment finally brought him to Indiana to the U.S. Army Finance and Accounting Center at Fort Benjamin Harrison. Morgan retired from the Army after 21 years of service with the rank of Major.

After retiring from the Army, Morgan served as Division Chief for the Division of Procurement and Distribution for the Indiana Department of Transportation, Director of the Indiana Department of Administration's Logistics Center, and as Deputy Controller for the City of Indianapolis. In May, 2004, he started his duties as Director of CTASC.

Victor Raskin is a Professor of English and Linguistics and is a Charter Member, Internal Advisory Board, CERIAS. He earned his Ph.D. in Mathematical Linquistics in 1970 at Moscow State University, USSR, with minors in Math and Computer Science.

Dr. Raskin founded the Interdepartmental Program in Linguistics at Purdue and chaired it from 1979 to 1999. He also founded the Natural Language Processing (NLP) Laboratory at Purdue in 1986 and has coordinated it ever since. Together with Sergei Nirenburg, Director, Computing Research Laboratory, New Mexico State University, Dr. Raskin developed a ground-breaking ontological semantic approach to NLP that provides near-comprehensive semantic capabilities to NLP systems and thus ensures their accuracy. He has participated in a large number of NLP research grants since 1966, most recently on the interface of NLP and information security. With Professor Mikhail Atallah, Dr. Raskin pioneered research on the interface of natural language processing and information security.

He has authored over 17 books and close to 200 articles in a vast range of disciplines around formal semantic theory, natural language processing (computational linguistics), linguistic and semantic theory, philosophy of language and science, and various applications of linguistics and computational linguistics to adjacent areas, including information security.

Research interests include natural language processing, ontology, computational semantics, world and lexical knowledge acquisition.

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Jennifer C. Richardson is an Assistant Professor of Education Technology, CERIAS. She earned her B.A. in History from Russell Sage College, M.S. in Administration and Policy Studies from University at Albany/SUNY. M.S. in Instructional Technolog and Ph.D. in Instruction from University of Albany/SUNY.

Professor Richardson's research areas include online learning environments, program evaluation, integration and implementation of technology into learning, educational technology professional development

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Dr. Marcus K. Rogers is an Associate Professor, Computer Technology and has affiliations with the American Psychological Association, Scientific Working Group on Digital Evidence, High Tech Crime Network, and Canadian Psychological Association.

Dr. Rogers developed/authored components of the SANS Core Essentials Information Security Certification Course (ISC2) and the Certified Information Systems Security Professional (CISSP) review course. Editorial Board for *SC Magazine* and the *International Journal of Digital Evidence*. Chair, (ISC)[2] International CBK Review Committee - Law Investigation & Ethics domain.

His publications include, "The Trojan Made Me Do It: A First Step in Statistical Based Event Reconstruction" (with M. Carney), for the *International Journal of Digital Evidence* (Spring 2004). "The Information Technology Insider Risk" (H. Bigdoli, Ed.) in the *Information Security Handbook* (2004) and "The Future of Computer Forensics: A Needs Analysis Survey" (with K. Seigfried), in *Computers and Security*.

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Matt's professional interests include human and organizational performance improvement, instructional design and learning theory, curriculum sharing, and distance learning as they intersect with information assurance and security. Specifically, Matt is interested in studying the efficacy of various information security awareness campaigns and training programs.

Matt also served as a facilitator for the Technology Integration Project (TIP), which focused both on helping high-school math and science teachers integrate educational technology into their teaching methods and introducing an efficient, effective, replicable professional development model. The TIP program was the longest-running Eisenhower grant in history.

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Professor Xu's research is on protection, management, and quality of service of next generation distributed systems. He leads the Lab for Research in Emerging Network and Distributed Services (FRIENDS). He has conducted projects in overlay and peer-to-peer networks, autonomic grid computing middleware, and mobile pervasive applications and services. His group has been focused especially on investigating runtime environment virtualization models and technologies for shared distributed infrastructures. The goal is to protect a shared infrastructure from untrusted applications running on top of it and vice versa. Their research results have been effectively applied to the containment, emulation, and analysis of network attacks launched by human or malware.

Dongyan Xu is the Year 2000 recipient of the C.L. and Jane W-S. Liu Award in the Department of Computer Science at UIUC. He is a member of ACM, USENIX, IEEE, and IEEE Communications Society, and is affiliated with CERIAS and e-Enterprise Center. His research is supported by the National Science Foundation (NSF), Microsoft Research, and the Purdue Research Foundation.

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AWARDS AND RECOGNITION

POSTER COMPETITION: 2005 marks the first awards given for student posters entered in the CERIAS Information Security Symposium. Cash prizes are awarded for first, second, and third places.

PILLAR OF CERIAS: The Pillar of CERIAS recognizes a CERIAS faculty/staff member and/or CERIAS sponsor for their service in furthering ideals and goals on which CERIAS achievements are built.

DIAMOND AWARD: The annual Diamond Awards go to the two students who most exemplify the "diamond in the rough" transition through outstanding academic achievement and/or research excellence.

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> Jennifer (The Grateful Debtor) Kurtz
> Mary Jo (Symposium Memory) Maslin
> Nancy (Program Maven) Williams

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