

# *38 Years of Cybersecurity in 10 Minutes*

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For Board of Trustees

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# Cybersecurity and Privacy

There are *billions* of computers in use worldwide today in everything from national defense, entertainment, transportation, home appliances, and self-driving vehicles...and more

## Modern society would not be possible without computing support

Purdue could not function, administratively, or in education or research, without computing

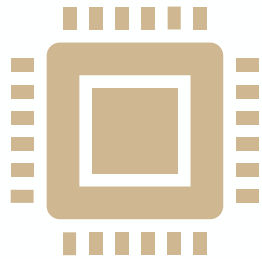
Every computer and network may be attacked, compromised, disabled. Data may be stolen.

- Ransomware
- Espionage
- Fraud and other crime
- Political hacktivism
- Intrusion into our personal lives

Sadly, most systems are designed and used with weak — or nonexistent — security.



# *My Start at Purdue*

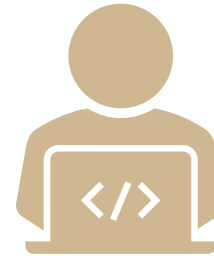


## **Joined Purdue Computer Science in 1987**

Focus on distributed computing and software engineering

First four PhD students were in these areas

Cybersecurity was a hobby



## **Switched to computer & network security 1992**

Attention of Internet Worm and computer virus response

Founded COAST Lab in Computer Science (with Professor Sam Wagstaff)

# ***CERIAS Beginning***

Founded in 1998 to also address interdisciplinary and multidisciplinary aspects of cybersecurity



**Center for Education and Research  
in Information Assurance and Security**

Initially, 8 faculty from 5 departments  
(CS, ECE, Philosophy, Political Science,  
Communication)

“

Without computers, there would  
be no computer abuse.

Without people, there would also  
be no computer abuse!

Clearly, we need to address a  
broader range of issues.

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My founding observation

# CERIAS Now

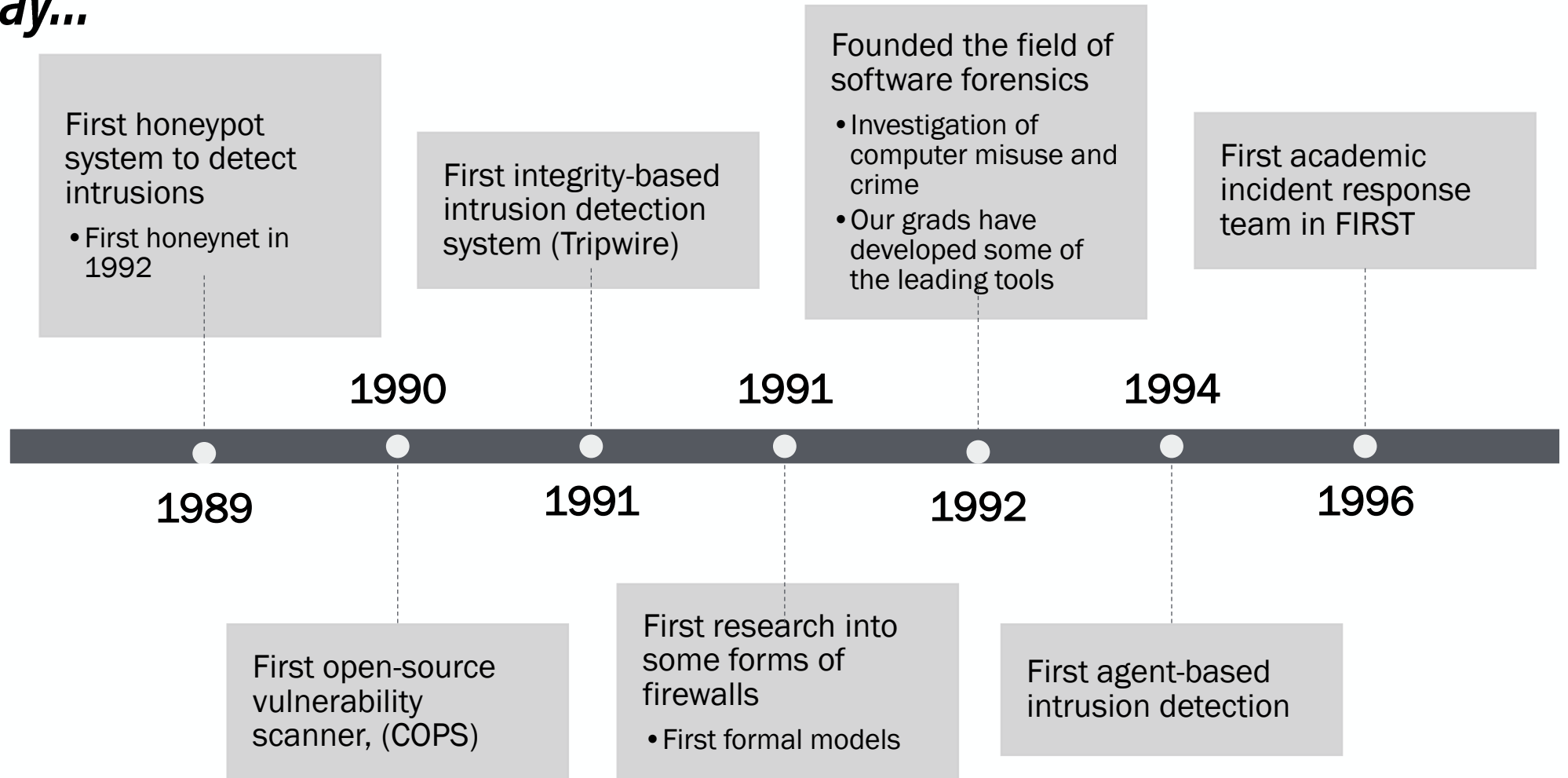
As of 2025 the leader in multidisciplinary cybersecurity research

- Over 140 faculty
  - Representation from 20 academic departments
  - Faculty from all Purdue campuses
  - 2/3 of CS Distinguished Professors
- Eight full-time staff
- Over 200 PhD graduates affiliated
- Current leadership
  - Professor Dongyan Xu, Executive Director
  - Joel Rasmus, Managing Director



# Along the Way...

My firsts at Purdue





# Cybersecurity Education

Purdue is a leader in this space

- I have created and taught six new courses in CS
  - Supported the creation of other courses in several departments
- Purdue was designated as an NSA/DHS National Center of Academic Excellence (first, in 1998)
  - Renewed this year
- Created the world's first complete graduate multidisciplinary program in 2000 (INSC)
  - Head of the program until this year; now Professor Chris Yeomans (PHIL)
  - Over 20 faculty members as advisors
  - To date, INSC has produced
    - 16 PhDs
    - 84 Master's (76 MS, 8 MA)



# *A Few of My Recent PhD Graduates (10 of 28)*

In Computer Science and in Information Security

Name	Topic Area	Now
(Major) Nicholas Harrell	Virality of Social Media Posts	Faculty at West Point
Robert Morton	Measurements of Confidentiality	Head of Security for Clouds, Microsoft
Boayke Dankwa	Real-time Intrusion Detection	Security Researcher, Rolls Royce
(Major) Alexander Master	Characterizing Internet Censorship	Faculty at West Point
Christopher Gutierrez	Deceptive Memory for Defense	Security Scientist, Intel Corporation
Jeffery Avery	Deceptive Patching for Defense	Program Manager, Northrop Grumman
Kelley Misata	Cybersecurity for Nonprofit Organizations	CEO, Sightline Security President, Open Information Security Foundation
Dannie Stanley	Operating System Kernel Security	Director of Research Science Peraton Labs
Brian Carrier	Foundations of Digital Forensics	Senior VP and CTO of Basis Technology
(Lt. Colonel, ret.) Paul Williams	Intrusion Detection and Response	VP of Enterprise IT & Security, Enlyte



# *My Current Main Focus Areas*

## Cybersecurity of High Consequence Systems

Security of control systems, real-time sensors and actuators

In conjunction with Sandia National Labs



## Ethical Publishing

Detecting plagiarism

Detecting review collusion

Exploring new publication mechanisms

In conjunction with ACM, CRA, IEEE

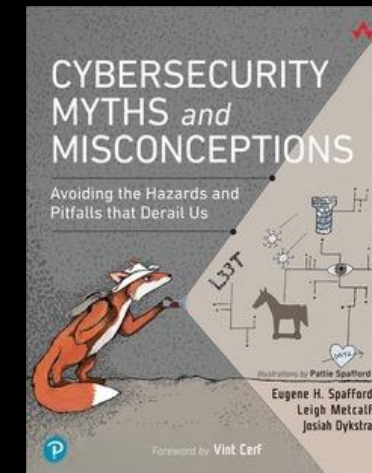


## Cybersecurity Education & Literacy

Course development

Working with other faculty

Educational materials



# *Thank You*

Questions? Comments?



More info

