TECHNOLOGY ASSOCIATION OF OREGON

Cybersecurity in Oregon Overview

November 3rd, 2017

Charlie Kawasaki, CISSP

TAO Board Member and TAO Cyber Lab Co-Chair

OSCIO Cyber Advisory Board Member

PacStar CTO, SDS CEO, Galois/Formaltech EIR

Co-Founder/Manager – NW Cyber Camp

Situation analysis

- Strong coalition of support for Oregon Cybersecurity offers solid foundation for driving exposure
  - Business and education partnership
- Oregon has the components to be seen as a leader in cybersecurity
- Oregon companies face critical shortages of trained cybersecurity talent
- Cybersecurity is an important and trending topic

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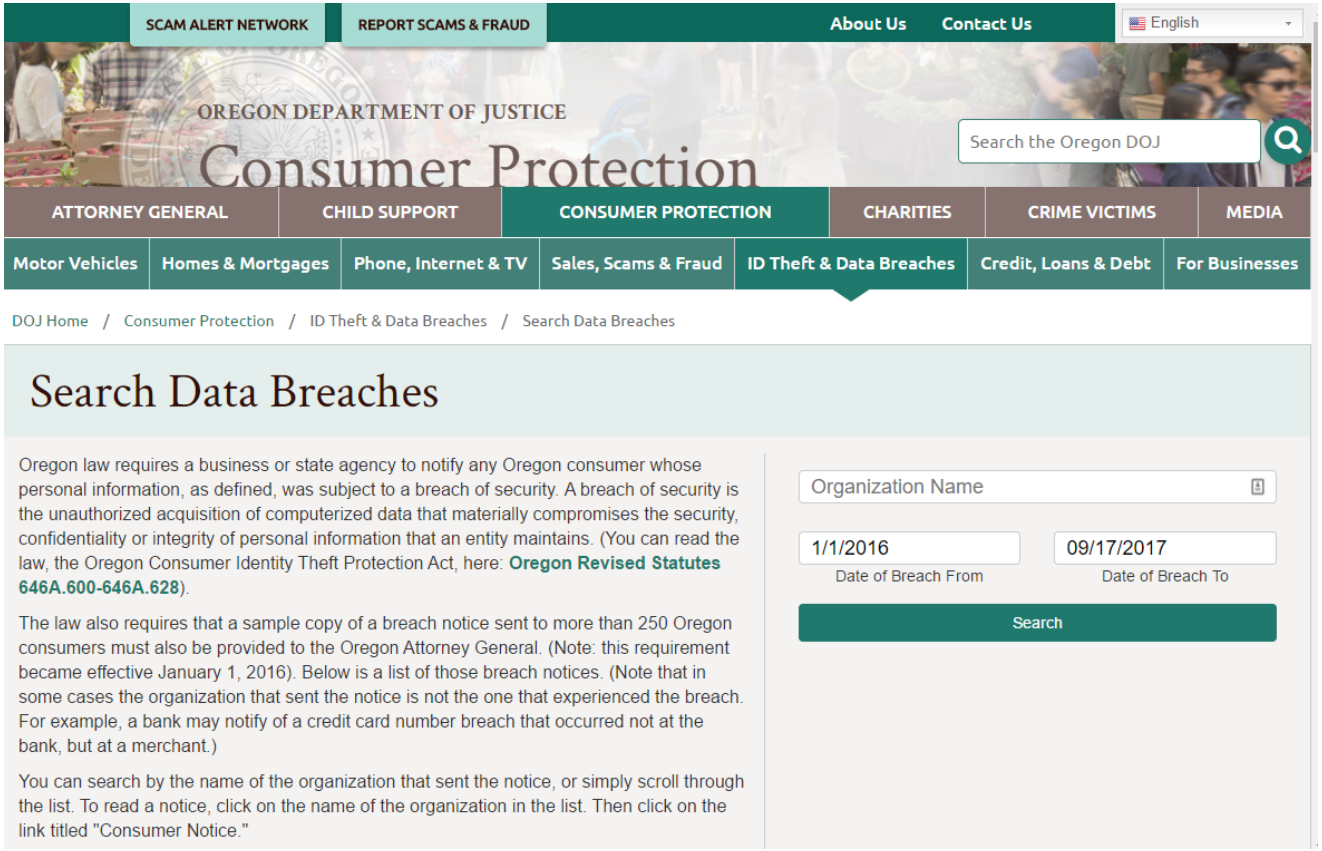
Oregon Cyber Breaches

108 companies reported breaches since Jan 1, 2016 requirement



As of 9/17/17

https://justice.oregon.gov/consumer/DataBreach

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http://cyberseek.org/heatmap.html

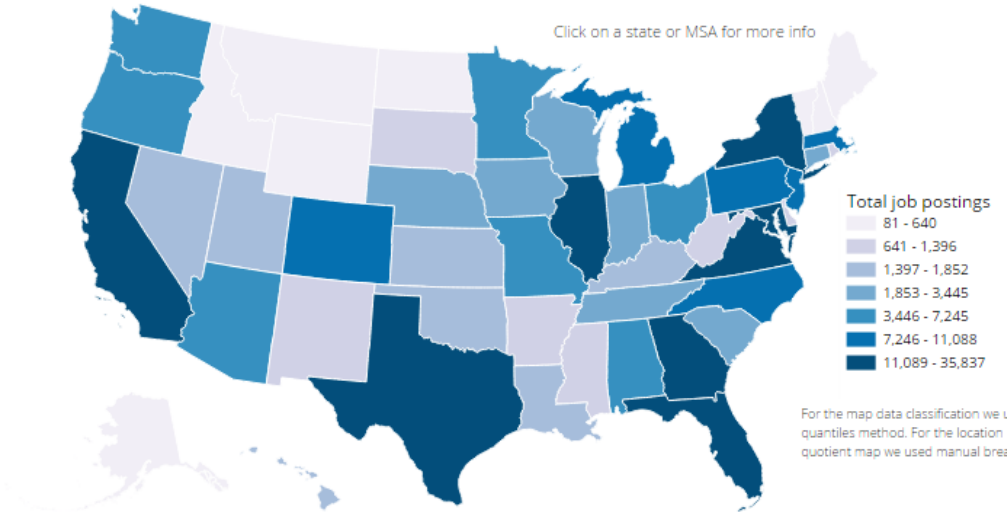
Snapshot Sept 17, 2017

Cybersecurity Supply/Demand Heat Map

Cybersecurity talent gaps exist across the country. Closing these gaps requires detailed knowledge of the cybersecurity workforce in your region. This interactive heat map provides a granular snapshot of demand and supply data for cybersecurity jobs at the state and metro area levels, and can be used to grasp the challenges and opportunities facing your local cybersecurity workforce.

Share

States | Metro Areas | Total job openings | Search State



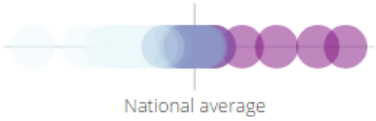
National level

TOTAL CYBERSECURITY JOB OPENINGS
299,335

TOTAL EMPLOYED CYBERSECURITY WORKFORCE
746,858

SUPPLY OF CYBERSECURITY WORKERS
Very Low
CYBERSECURITY WORKFORCE SUPPLY/DEMAND RATIO

GEOGRAPHIC CONCENTRATION
Average
LOCATION QUOTIENT



TOP CYBERSECURITY JOB TITLES

- Cyber Security Engineer
- Cyber Security Analyst
- Network Engineer / Architect
- Cyber Security Manager / Administrator
- Software Developer / Engineer
- Systems Engineer
- Systems Administrator

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http://cyberseek.org/heatmap.html

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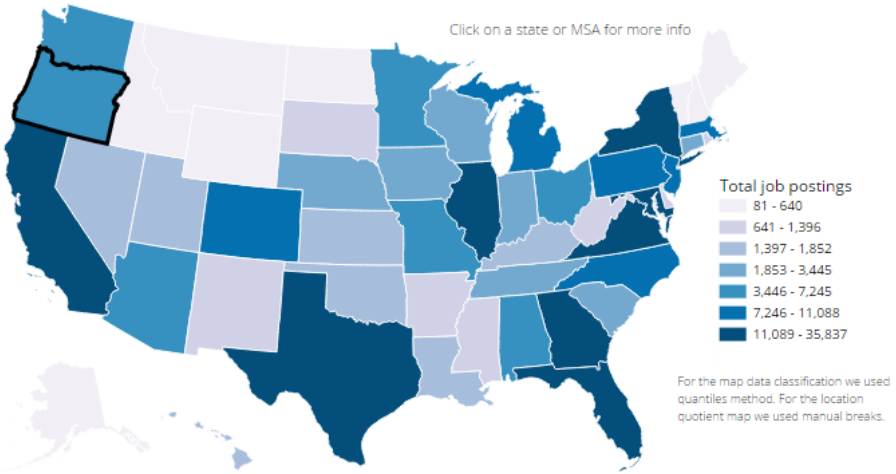

Oregon

TOTAL CYBERSECURITY JOB OPENINGS
3,448

TOTAL EMPLOYED CYBERSECURITY WORKFORCE
6,724

SUPPLY OF CYBERSECURITY WORKERS
Very Low
CYBERSECURITY WORKFORCE SUPPLY/DEMAND RATIO
OR
1.95
National average
2.5

GEOGRAPHIC CONCENTRATION
Average
LOCATION QUOTIENT
OR
0.900
National average
1.0

TOP CYBERSECURITY JOB TITLES

- Cyber Security Engineer
- Cyber Security Analyst
- Network Engineer / Architect
- Cyber Security Manager / Administrator
- Systems Engineer
- Vulnerability Analyst / Penetration Tester
- Cyber Security Architect
- Software Developer / Engineer
- Systems Administrator

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Oregon Senate Bill 90

TECHNOLOGY ASSOCIATION OF OREGON

SB 90 Signed Sept 19th, 2017

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SB 90 Supporters

Letters of Support	Testimony	Floor Letter
Rodney Barker & Wayne Machuca, Mt. Hood Community College	Keith Brown, IBM/TAO (*2)	Technology Association of Oregon
Skip Newberry, TAO	Jim Gardener, Microsoft (*2)	Oregon State University (OSU)
Michael Gutsche, Hewlett Packard Enterprise	Skip Newberry, TAO	Mt. Hood Community College
Ben Eckstein, CompTIA	Wayne Machuca, Mt. Hood Community College (*2)	Hewlett Packard Enterprise
Jess Daly	Charlie Kawasaki, TAO (*2)	Microsoft
Lois Brook, OSU	Amelia Kawasaki, PDX Cybercamp	CompTIA
Sherry Swackhamer, Multnomah County	Zander Work, PDX Cybercamp	Galois
Charlie Kawasaki, Software Diligence Services	Lewis Howell, Hueya, Inc.	McAfee
Kerry Fry, Redhawk Network Security	Jim Wherry, Redhawk Network Security	Oregon Tech
Becky Gladstone, League of Women Voters	Brittany Miles, Oregon Tech	Redhawk Security
Robert Wiltbank, Galois	Becky Gladstone, League of Women Voters	Hueya
Peggy J. Miller, PacStar		PacStar
		Multnomah County
		SheerID
		University of Oregon
		Tozny

State InfoSec Re-Org

Under the direction of the Governor and in consultation with state agencies and labor organizations representing the affected employees, the Director of the Oregon Department of Administrative Services or a designee of the director shall identify **each position and employee engaged in the performance of agency information technology security functions to be transferred to the office of the State Chief Information Officer, and state agencies shall transfer the identified employees to the office of the State Chief Information Officer.**

State Advisory Council

The **Oregon Cybersecurity Advisory Council** is established within the office of the State Chief Information Officer. The council consists of **nine voting members**. A majority of the council's voting members must be representatives of **cyber-related industries in Oregon**. The voting members of the council must include at least one representative of **post-secondary institutions** of education and one representative of **public law enforcement agencies** in Oregon.

(a) Serve as the statewide advisory body to the State Chief Information Officer on cybersecurity.
(b) Provide a statewide forum for discussing and resolving cybersecurity issues.
(c) Provide information and recommend best practices concerning cybersecurity and resilience measures to public and private entities.
(d) Coordinate cybersecurity information sharing and promote shared and real-time situational awareness between the public and private sectors in this state.
(e) Encourage the development of the cybersecurity workforce through….

State Advisory Council

Kerri Fry,
Redhawk Security

Michael Gutsche,
Hewlett Packard Enterprise

Charlie Kawasaki,
Software Diligence and Technology Association of Oregon

Andrew Plato,
Anitian

Andy Schroder,
Public Law Enforcement/Intel

Executive Sponsors

Alex Pettit, PhD,
Oregon State Chief Information Officer

Tom Quillin,
MacAfee

Kris Rosenburg,
Oregon Institute of Technology

Ken Kestener
Lake County Commissioner

Dennis Tomlin,
Multnomah County and Technology Association of Oregon

Megan McKenzie
McKenzie Worldwide PR
Council Secretary (Non-Voting)

Skip Newberry
Technology Association of Oregon

TECHNOLOGY ASSOCIATION OF OREGON

Cyber Center of Excellence

SECTION 4. Oregon Cybersecurity Center of Excellence. The State Chief Information Officer shall develop a plan for the establishment of an Oregon Cybersecurity Center of Excellence. The State Chief Information Officer shall submit the plan to an appropriate committee or interim committee of the Legislative Assembly no later than January 1, 2019.

The plan must also include a description of the actions, timelines, budget and positions or contractor resources required for the center to:

(1) Coordinate information sharing related to cybersecurity risks, warnings and incidents.

(2) Provide support regarding cybersecurity incident response and cybercrime investigations.

(3) Serve as an Information Sharing and Analysis Organization pursuant to 6 U.S.C. 133 et seq., and as a liaison with the National Cybersecurity and Communications Integration Center within the United States Department of Homeland Security, other federal agencies and other public and private sector entities on issues relating to cybersecurity.

(4) Identify and participate in appropriate federal, multistate or private sector programs and efforts that support or complement the center's cybersecurity mission.

(5) Receive and appropriately disseminate relevant cybersecurity threat information from appropriate sources, including the federal government, law enforcement agencies, public utilities and private industry.

Strategy and Response Plan

SECTION 4. Oregon Cybersecurity Center of Excellence.

(6) Draft and biennially update an Oregon Cybersecurity Strategy and a Cyber Disruption Response Plan to be submitted to the Governor and an appropriate committee or interim committee of the Legislative Assembly. The plan must:

(a) Detail the steps that the state should take to increase the resiliency of its operations in preparation for, and during the response to, a cyber disruption event;
(b) Address high-risk cybersecurity for the state's critical infrastructure, including a review of information security technologies currently in place to determine if current policies are sufficient to prevent the compromise or unauthorized disclosure of critical or sensitive government information inside and outside the firewall of state agencies, and develop plans to better identify, protect from, detect, respond to and recover from significant cyber threats;
(c) Establish a process to regularly conduct risk-based assessments of the cybersecurity risk profile, including infrastructure and activities within this state;
(d) Provide recommendations related to securing networks, systems and data, including interoperability, standardized plans and procedures, evolving threats and best practices to prevent the unauthorized access, theft, alteration or destruction of data held by the state;
(e) Include the recommended content and timelines for conducting cybersecurity awareness training for state agencies and the dissemination of educational materials to the public and private sectors in this state through the center;
(f) Identify opportunities to educate the public on ways to prevent cybersecurity attacks and protect the public's personal information;
(g) Include strategies for collaboration with the private sector and educational institutions through the center and other venues to identify and implement cybersecurity best practices; and
(h) Establish data breach reporting and notification requirements in coordination with the Department of Consumer and Business Services.

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Oregon Cybersecurity Awareness Program

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Goals and objectives

- Build awareness across the state and beyond about Oregon's cybersecurity business and educational programs, talent and companies
  - Promote workforce development and create awareness of career opportunities
- Raise visibility of cybersecurity and support legislative initiatives
- Provide critical information and tools to help Oregon businesses and organizations improve cybersecurity

Cybersecurity in Oregon is not getting the visibility it deserves. This program is designed to change that.

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Program Overview

- Develop overarching mission, vision and background materials for program under TAO cybersecurity lab
- Create a neutral and inclusive website
- Assemble resources from across collaborators
- Curate and create compelling content
- Targeted digital marketing and PR activities
- Tap into the power of social media

Cybersecurity website

- Develop one website/portal for all things Oregon cybersecurity
  - Serves as a cybersecurity information clearinghouse
  - Cross linked to sponsors and stakeholders
  - Rotating banners to give visibility to sponsors, high-value content
  - News and blog features
  - Mobile device friendly
  - Referrals and directories
  - Optimize for good search performance

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Website

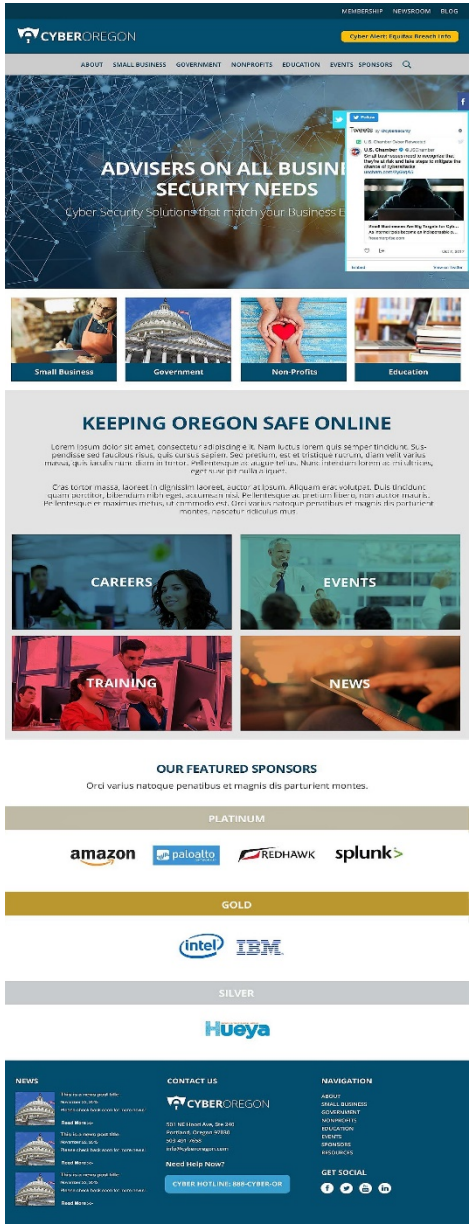
Curated global cyber news

Contributed blogs

Education achievements

Success Stories

Threat alerts



Oregon cyber news

How-to videos

Webinars, events

Personality profiles

Research reports

Resource lists

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Oregon Cyber Day

- Proposed Monday Nov 20th
  - Governors Announcement
  - Press event along with industry and Advisory Board presentations
  - Possible job fair
  - At Oregon Tech (OIT) in Wilsonville
  - Starting around 10:30am

What's in it for sponsors?

- For cybersecurity companies
  - Drive more sales in Oregon
  - Recruiting
  - More visibility in state/local government
- For colleges and universities
  - Increase awareness of program offerings for attracting students and donations
  - Improve placement options for students
  - Generate more interest for internships, co-research, etc.
- For NGOs/non-profits/associations
  - Raise awareness for programs
  - Brand building
  - Add value for membership
  - Member/sponsor/stakeholder recruiting

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Preliminary List of Supporters

- Amazon Web Services - funding
- RedHawk - funding
- Comcast NBC/Universal - funding
- Hueya - funding
- Computer Associates - funding
- HPE/HP
- Microsoft
- Palo Alto Networks
- Iovation
- McAfee and Intel Security
- Splunk - in-kind
- IBM - in-kind
- Symantec
- SecureWorks
- NICUSA, Inc.
- FireEye
- Tanium
- ForgeRock
- FirstData
- CompuWare
- FusionX/Accenture Security
- Verizon
- ZScaler
- RiskSense
- HortonWorks

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Oregon Cybersecurity Educational Programs

Educational Programs

- Mt. Hood Community College. NSA recognized 2-year AAS degree programs with professional certs such as Cisco, CompTIA, etc. – Prof. Wayne Machuca

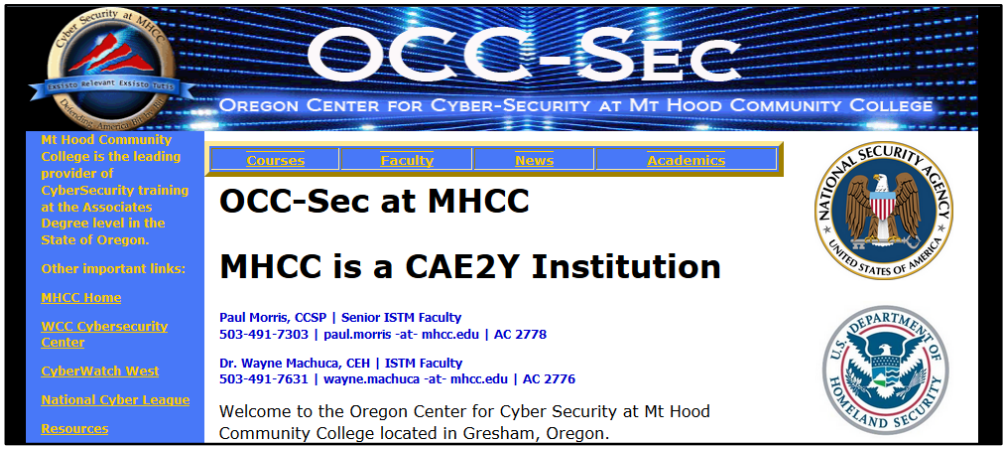
- OregonTech (Wilsonville). Fall 2018 BS Cyber Security, M.S.E Cybersecurity. NSA recognition in process. Offers MSSP for small and midsized businesses staffed by students. – Prof. Kris Rosenburg.

- PSU. Masters Security Certificate and MS Comp Sci with Security Track. Sponsors multiple high school camps and runs yearly high school internships. - Prof. Wu-Cheng Feng

- OSU. B.S Computer Science with applied track in cybersecurity. Has 6 computer security research professors. – Prof. Rakesh Bobba

Mt Hood Community College

- Oregon's First AAS Degree in Cyber Security
- Established 2013, over 100 cyber security completions in 2016-2017
- Founded The *"Oregon Center for Cyber Security"* Oregon's first Community College Center of Excellence



Mt. Hood Community College

Endorsed by NSA and DHE as a **Center for Academic Excellence – 2 year Institution** (CAE-2Y) demonstrating MHCCs delivery of quality cyber security training at a national level.

Supported by the CAE community, CyberWatch, and CyberWatch West through the NICE Initiative

Cyber Security Based Educational Programs

- Two Degrees in Cyber Security (Networking and Database)
- Four Career Pathway Certificates of Completion to support Oregon's workforce development
- Membership in various Academies (Cisco, Oracle, VM Ware, etc)
- Training directed towards industry related certification exams (Cisco, CompTIA, etc.)

Cybersecurity programs – Oregon Tech

Today:

- B.S. Information Technology – Cybersecurity Focus (31 credits of relevant electives)

Fall 2018:

- B.S. Cybersecurity
- M.S.E. Cybersecurity

Oregon Tech has applied and is in the process of achieving recognition as a National Security Agency / Department of Homeland Security Center of Academic Excellence in Cyber Defense Education (CAE-CDE)

Oregon Tech Cyber Defense Center

Managed Security Services for small and mid-sized businesses.

- Cybersecurity awareness training
- Risk assessment and vulnerability scanning
- Security monitoring and incident response
- Managed firewall, sandboxing and end-point AV

Students working under the supervision of professional staff.

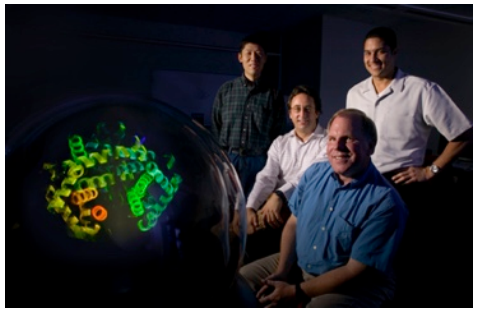
Cybersecurity Education & Research at Oregon State

Prof. Rakesh Bobba

EECS Bachelors Degrees

Oregon State University
College of Engineering

- B.S. in Electrical Engineering
- B.S in Computer Science
  - Systems Track
  - Applied Track – Customizable
    - Bioinformatics
    - Simulation and Game Programming
    - Human Computer Interaction
    - Business and Entrepreneurship
    - **Cybersecurity**



Cybersecurity Track

Oregon State University
College of Engineering

CORE

- CS 321 (Intro to Theory of Computation)
- CS 370 (Intro to Security)
- CS 373 (Defense Against the Dark Arts)
- CS 427 (Cryptography)
- CS 478 (Network Security)

ELECTIVES

- CS 312 (Linux System Administration)
- CS 434 (Machine Learning and Data Mining)
- CS 440 (Database Management Systems)
- CS 472 (Computer Architecture)
- CS 476 (Advanced Computer Networking)
- CS 496 (Mobile & Cloud Software Development)
- MTH 440 (Computational Number Theory)
- MTH 451 (Numerical Linear Algebra)
- MTH 452 (Numerical Solutions of Ordinary Differential Equations)
- MTH 453 (Numerical Solutions of Partial Differential Equations)

Cybersecurity Faculty

Oregon State University
College of Engineering

System Security and Resiliency: Clouds, Smart Grids, Real-time Systems

Cryptography, Computing on Encrypted Data

Applied Cryptography, Privacy Enhancing Technologies

Systems security, mobile security, malware, and hardware security

Networking, Cryptography, System Security

Resilient Control,

Cyber-physical Security

Alcatel·Lucent Honeywell cisco FUJITSU intel Security

BOSCH Google YAHOO! SEL SCHWEITZER ENGINEERING LABORATORIES

Portland State UNIVERSITY

Security Education

Graduate:

- Masters Security Certificate
- Masters in Computer Science, Security Track (9 credits)

Undergraduate:

- Security injections for lower division courses (CS 201)
- Capture-the-Flag clubs (beginner and advanced)
- OregonCTF

High-school:

- Saturday Academy CyberAcademy camp
- CyberPDX residential summer camp (NSA/NSF GenCyber)
- Saturday Academy ASE internships in CTFs

Courses:

Cryptography
Introduction to Computer Security
Malware Reverse-Engineering
Network Security
Web Security
Software Specification and Verification
Software Implementation and Testing

Portland State UNIVERSITY

CyberPDX

- NSA/NSF GenCyber camp
  - 1-week residential camp for 60 high-school sophomores and 20 high-school teachers
  - Integrated cyber-security curriculum
    - Cryptography and security
    - Programming
    - Cyber-policy
    - Film-making
  - https://cyberpdx.org/

Title Sponsor

NW CYBER CAMP 2018

2018 Sponsors

NW Cyber Camp 2018

Purpose: "To Inspire Students Towards Careers in Cybersecurity"

- One week educational camp for 9th to 12th grade students (novices)
- Dates: July 16th to July 20st
- Five locations simultaneously
  - Girls Only, NE Portland Area, (location being finalized)
  - Co-Ed, Center for Advanced Learning, 1484 NW Civic Dr, Gresham, OR 97030.
  - Co-Ed, Mentor Graphics, 8005 Boeckman Rd, Wilsonville, OR 97070.
  - Co-Ed, Central Oregon Community College, 2600 NW College Way, Bend, OR 97703
  - Co-Ed, Oregon State University, Corvallis OR
- $250 student fee - scholarships available based on financial need. (up to 25% of students)
- Complements annual Air Force Association cyber defense competition
- Student application deadline, June 1st, 2018. Accepted on first come first serve basis
- Students apply here: www.nwcyber.camp
- Managed by EnergySec (www.energysec.org). An Oregon 501c(3) non-profit

PacStar

EnergySec
The National Energy Sector Cyber Security Organization

NW Cyber Camp 2018

- Includes additional focus on introductions to cybersecurity careers
  - Includes industry expert instructors and guest speakers from major players
  - May include evening networking banquet on Thursday July 19th, with students, parents, educators, industry experts and company sponsors

*In discussions

NW Cyber Camp 2018

- Organized in Bend by
  - Kerri Fry, President, Redhawk Security
  - Lewis Howell, Founder & CEO, Hueya
- Call to Action
  - Help us get the word out – do you mailing lists or relationships with organizations that can help promote to students?
  - Corporate Sponsorship?
  - Guest speaking?
  - Join our volunteer management team?

PacStar

EnergySec
The National Energy Sector Cyber Security Organization

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Organizations and Resources

Industry and Professional Associations

- Technology Association of Oregon
- EnergySec
- ISSA
- ISACA

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Oregon Cybersecurity Companies*

- Cylance
- Tripwire
- Galois
- PacStar
- Tozny
- Iovation
- IBM
- McAfee
- Formaltech
- Amazon Web Services
- SureID
- Typhone
- Anitian
- Hewlett Packard Enterprise
- Aruba
- Microsoft
- Redhawk
- Hueya
- Mentor Graphics
- RADAR
- ID Experts
- SheerID
- PKI Solutions
- Navex Global