

# Dr. Ronny L. Bull, Ph.D.

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## Education

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- **Clarkson University** **Potsdam, NY**  
○ *Computer Science Ph.D.,* *Graduated: Dec, 2016*  
Dissertation Title: *A Critical Analysis of Layer 2 Network Security in Virtualized Environments.*
- **ITT Exelis/MVCC** **Rome, NY**  
○ *EC-Council Certified Ethical Hacker (C|EH) Training Course,* *May 14-18, 2012*
- **SUNY Institute of Technology** **Utica, NY**  
○ *Computer Science M.S.,* *Graduated: May, 2012*  
Thesis Title: *Design and Implementation of a Computer Science Virtualized Lab Environment at SUNYIT.*
- **SUNY Institute of Technology** **Utica, NY**  
○ *Computer Science B.S.,* *Graduated: Dec, 2010*  
Honors: *President's List, Magna Cum Laude*  
Academic Award: *Outstanding Student Award - B.S. Computer Science*
- **Herkimer County Community College** **Herkimer, NY**  
○ *Computer Network Technician A.A.S.,* *Graduated: May, 2006*  
Honors: *President's List*
- **Northeast Technical Institute** **South Portland, ME**  
○ *Cisco Networking Academy,* *2002*
- **Northeast Technical Institute** **South Portland, ME**  
○ *Microsoft MCSE Training,* *2001*
- **Northeast Technical Institute** **South Portland, ME**  
○ *PC Repair Technician,* *2001*

## Professional Certifications

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- **CompTIA**  
○ *Secure Infrastructure Specialist (CSIS),* *2014*
- **CompTIA**  
○ *IT Operations Specialist (CIOS),* *2014*

- **CompTIA**  
Security+, 2014
- **EC-Council**  
Certified Ethical Hacker (C|EH v7), 2012
- **Cisco**  
Certified Networking Associate (CCNA), 2002
- **Microsoft**  
Certified Systems Administrator (MCSA), 2002
- **Microsoft**  
Certified Professional (MCP), 2002
- **CompTIA**  
Network+, 2002
- **CompTIA**  
iNet+, 2002
- **CompTIA**  
A+, 2001

## Teaching Experience

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- **Utica College** **Utica, NY**  
Associate Professor - Computer Science Department August 2015–Present  
- Advisor to both the Computer Science and Cybersecurity clubs, and Head Coach for the NECCDC team  
- Designer and Administrator of the Computer Science Linux Research Network and Virtualized Laboratory Environment
- **SUNY Polytechnic Institute** **Utica, NY**  
Lecturer - Computer Science Department August 2013–August 2015  
- Advisor to the Network and Computer Security club, and Coach for the NECCDC team  
- Advisor for Undergraduate and Graduate Capstone Projects  
- Advisor and committee member for multiple Master's theses
- **SUNY Institute of Technology** **Utica, NY**  
Adjunct Professor - Computer Science Department August 2012–June 2013
- **Mohawk Valley Community College** **Utica/Rome, NY**  
Adjunct Professor - Computer Science Department August 2011–August 2013

## Teaching Activities While At Utica College

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Note: \* indicates courses that I created and developed that were not previously offered at the institution. \*\* indicates courses that I completely revamped upon taking over the course.

- CSC102: Computer Science II
  - *Description:* Continuation of Computer Science 101. Introduction to recursion, sorting, and searching algorithms. Introduction to Object-Oriented programming, abstract data types, linked lists, stacks, queues, and trees. Lecture and laboratory. This course was taught using both lecture and hands-on laboratory exercises each week.
- CSC117: Microcomputers & Application Software
  - *Description:* An introduction to basic terminology and applications of computers including: operating systems, word processing, spreadsheets, and presentation software. This course was taught in a flipped classroom style with classroom engagement consisting of primarily hands-on laboratory exercises with one-on-one interaction between the students and me.
- CSC206: Cybersecurity Scripting\*
  - *Description:* This course presents the student with an understanding of information security programming and script writing utilizing Python and other scripting languages.
- CSC207Z: Linux for Security & Forensics\*
  - *Description:* This course introduces students to the Linux operating system. The basics of Linux systems administration are explored with a focus on network services and security.
- CSC225: Introduction to the Unix Operating System\*\*
  - *Description:* Architecture of UNIX: organization, file system, process management, UNIX Shells and Shell programming, networking, security, and the Internet. Lecture and Laboratory.
- CSC300: Topics in Computer Science: Introduction to C/C++\*
  - *Description:* An introduction to the C and C++ programming languages through hands-on programming.
- CSC300: Topics in Computer Science: Offensive Security\*
  - *Description:* This course provided an in-depth experience in the area of Penetration testing. Students studied the fundamentals and key steps of a penetration test, as well as gained hands-on experience and exposure to the tools and methods utilized by networking security professionals while conducting penetration tests in a controlled lab environment. A large portion of this course was based on hands-on red team activities that required the delivery of detailed documentation that outlined the processes employed by the students in order to achieve the goals of each exercise.
- CSC300: Topics in Computer Science: Web Development\*
  - *Description:* An introduction to web development. Students gained hands on experience developing web pages using HTML and PHP.
- CSC323: Introduction to Networks\*\*
  - *Description:* Topics include network types and communication models, hardware components, applications, protocols, standards, internetworking and routing concepts, OSI Model, TCP/IP, LAN and WAN technologies. This course was mainly lecture based with in-class and assigned hands-on activities.
- CSC323Z: Introduction to Networks (*Online/Compressed*)\*\*
  - *Description:* Topics include network types and communication models, hardware components,

applications, protocols, standards, internetworking and routing concepts, OSI Model, TCP/IP, LAN and WAN technologies. This course was mainly lecture based with in-class and assigned hands-on activities.

- CSC390: Independent Study - Spring 2016
  - *Description:* Computer Science independent study in virtualization network security. Topics included virtualization management, virtual networking, virtual network security, and network protocol vulnerability exploitation. The student worked with me conducting research in virtualized network security. Tasks included data collection, exploit development, and testing. A white paper was written based on the research and submitted to two major cybersecurity conferences (*Blackhat 2016, and DEF CON 24*) for review. The student presented a portion of the work at the Utica College Student Research Conference and the work was accepted for publication and presentation at the DEF CON 24 computer security conference in Las Vegas, Nevada. (*See publication listing for more details*).
- CSC390: Independent Study - Spring 2017
  - *Description:* Continuation of Computer Science independent study in virtualization network security. Topics included virtualization management, virtual networking, virtual network security, and network protocol vulnerability exploitation. The student worked with me conducting research in virtualized network security. Tasks included data collection, exploit development, and testing. We also had multiple meetings with industry representatives from Amazon AWS, VMWare, Bell Canada, and Huawei about future collaborative research efforts in this area.
- CSC390: Independent Study - Spring 2017
  - *Description:* Computer Science independent study in greenhouse sensing and automation. Two Computer Science students worked with myself and Professor Scanga developing specifications to automate certain tasks in the Utica College greenhouse. The students performed research, acquired hardware, and began development on the core sensing infrastructure. By the end of the semester a working prototype was established for future students to expand upon. Both students entered the work into the 2017 Utica College Student Research Day as a poster presentation, and were presented with the *best poster* award.
- CSC390: Independent Study - Spring 2018
  - *Description:* Computer Science independent study in greenhouse sensing and automation. One student worked on adding more sensors to the greenhouse sensing network, and continued to develop the sensor polling scripts throughout the course of the Spring 2018 semester.
- CSC390: Independent Study - Spring 2018
  - *Description:* Computer Science independent study in Voice over IP alerting systems. One student developed a prototype of a campus alerting system based on Open Source Voice over IP technologies, and presented his work as a poster presentation at the Spring 2018 Student Conference for Research, Professional Activities, and Creative Arts.
- CSC432: Computer & Network Security\*\*
  - *Description:* Fundamentals of securing computers and networks. Topics include security objectives, threats, vulnerabilities, types of attacks, authentication methods, access control methods, encryption, intrusion detection, VPNs, and firewalls. This course consisted of both lecture and intensive hands-on laboratory exercises each week that help to prepare the students

for entering a career in network security and administration. Many students stated that the experiences that they had in this course ended up being the main focus of conversation during job interviews with prospective employers.

- CSC432Z: Computer & Network Security (*Online/Compressed*)\*\*
  - *Description:* Fundamentals of securing computers and networks. Topics include security objectives, threats, vulnerabilities, types of attacks, authentication methods, access control methods, encryption, intrusion detection, VPNs, and firewalls. This course consisted of both lecture and intensive hands-on laboratory exercises each week that help to prepare the students for entering a career in network security and administration. Many students stated that the experiences that they had in this course ended up being the main focus of conversation during job interviews with prospective employers.
- Cybersecurity Master's Project Committee Member
  - *Description:* Committee member for Cybersecurity Master's project on Internet of Things Security.

## Teaching Activities Prior to Utica College

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*Note: \* indicates courses that I created and developed that were not previously offered at the institution.*

### State University of New York Polytechnic Institute.....

#### Summer 2015.....

- NCS490: Network Engineering (*Special Topics*)\*
- TEL590W: Research Topics in Virtualization (*Special Topics*)\*
- TEL599: Telecommunications Master's Thesis Advisor (*1 student*)

#### Spring 2015.....

- NCS430: Penetration Testing\*
- NCS450: Network Security
- NCS495: Network & Computer Security Capstone (*7 students*)
- TEL590W: Advanced Research Topics in Cloud Security (*Special Topics*)\*
- TEL599: Telecommunications Master's Thesis Advisor (*2 students*)

#### Fall 2014.....

- IS310: Hardware and Network Infrastructure
- IS310W: Hardware and Network Infrastructure (*Online*)
- NCS416: Digital & Internet Telephony
- NCS490: Linux Networking (*Special Topics*)\*
- NCS495: Network & Computer Security Capstone Advisor (*1 student*)
- IS495: Computer Information Systems Practicum Advisor (*1 student*)
- CS:498: Computer Science Capstone (*1 student*)
- TEL500: Voice Communications
- TEL597: Telecommunications Master's Research Project Advisor (*1 student*)

## Summer 2014

- TEL590: Linux Networking (*Special Topics, Online*)\*

## State University of New York Institute of Technology

### Spring 2014

- NCS315: Networking of Information Systems
- NCS315W: Networking of Information Systems (*Online*)
- NCS490: Penetration Testing (*Special Topics*)\*
- NCS490: VoIP & Multimedia Security (*Special Topics*)\*
- NCS495: Network & Computer Security Capstone Advisor (*1 student*)
- CS498: Computer Science Capstone Advisor (*1 student*)
- TEL550: Advanced Network Standards & Protocols
- NCS552: VoIP & Multimedia Security\*
- TEL590: VoIP & Multimedia Security (*Special Topics, Online*)\*

### Fall 2013

- IS310: Hardware and Network Infrastructure
- IS310W: Hardware and Network Infrastructure (*Online*)
- NCS416: Digital & Internet Telephony
- NCS425: Inter-Networking
- CS498: Computer Science Capstone (*1 student*)
- IS495: Computer Information Systems Practicum (*1 student*)
- NCS495: Network & Computer Security Capstone (*1 student*)
- TEL500: Voice Communications

### Spring 2013

- CSC317: Computer Systems & C/C++ Programming
- NCS490: Virtualization (*Special Topics*)\*

### Fall 2012

- NCS416: Digital & Internet Telephony
- TEL500: Voice Communications

## Mohawk Valley Community College

### Summer 2013

- Net+ Certification Preparation Course

### Spring 2013

- Net+ Certification Preparation Course (*2 sections*)

### Fall 2012

- CI112: Networking Fundamentals
- Net+ Certification Preparation Course

## Spring 2011.....

- IS101: Computer Applications & Concepts (2 sections + 2 labs)

## Fall 2011.....

- IS101: Computer Applications & Concepts (2 sections + 2 labs)

## Professional Experience

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- **Adirondack IT Solutions, LLC** **Frankfort, NY**  
*Owner, Chief Scientist, & Principal Consultant* *October 2010–Present*  
Provide IT consulting, networking & security solutions, enterprise VoIP solutions, server virtualization, video surveillance, web design, and application development services for select clientele in Central and Northern NY. Also provide consulting services for multiple high performance computing, advanced networking, security, and drone related research projects at the Air Force Research Laboratory in Rome, NY.
- **Bull Reef Aquaculture** **Frankfort, NY**  
*Owner & Chief Aquaculture Scientist* *August 2018–Present*  
Designed, engineered, constructed, and operate a state of the art, fully automated marine coral aquaculture facility which provides 100% aquacultured live coral specimens to aquarium hobbyists, retailers, and researchers.
- **ITT/Exelis Inc.** **Rome, NY**  
*Software Engineer II* *July 2012–April 2015*  
Software engineering contractor at AFRL in Rome, NY working in the High Performance Computing group on Neuromorphic Perception and Text Recognition projects. My primary role as a software engineer was to develop highly parallelized and efficient code to perform neuromorphic perception and recognition functions on various types of input media utilizing C++, CUDA, and OpenCV as well as various other internally developed libraries. I also developed and maintained makefiles and bash scripts that automate building, deployment, and execution of our software in a highly parallelized environment that utilized a custom message passing solution developed by our team to send data between each process. I also served as a Linux administration consultant to the AFRL High Performance Computing Area Resource Center.
- **M.A. Polce Consulting, Inc.** **Rome, NY**  
*Senior Engineer* *March 2012–July 2012*  
Developed and implemented new IT solutions, as well as performed on-site and remote support for clients. VoIP and Linux specialist.
- **ESI** **New Hartford, NY**  
*IT Consultant* *August 2010–April 2011*  
On-site Consultant and Backup Systems Administrator for the Herkimer County Community College Information Services department. Was responsible for the research and deployment of new technologies. Assisted in the management of the existing network infrastructure consisting of over 1200 network nodes. Assisted in the maintenance of RHEL servers running Oracle 10g and system imaging services. Supported and maintained a Windows Server 2003 server farm providing Active Directory, Exchange, DFS, DHCP, DNS and printing services to Windows XP, Vista, and 7 clients. Assisted in the setup of a new iMac/Xserver lab that was integrated into the current active directory environment. Researched and prototyped a streaming media solution using RHEL and Icecast that allows the Radio and TV department to stream their radio broadcast over the internet from the HCCC website. Assisted in the deployment of a new Citrix based lab. Assisted in the virtualization of all servers to a VMWare environment using vSphere and vConsole. Was also responsible for the deployment and maintenance of Sophos AV & Deepfreeze client installations.

- Ronny L. Bull - IT Consultant** **Glenfield, NY**  
 Owner & Principal Consultant *January 2002–December 2010*  
*Reformed as Adirondack IT Solutions, LLC in 2011*  
 Provided IT Consulting, networking solutions, enterprise VoIP solutions, server virtualization, video surveillance, web design, and application development services for businesses in Central and Northern NY.
- SUNY Institute of Technology** **Utica, NY**  
 Student Administrator - Computer Science Department Unix Network (DOGNET) *August 2009–May 2012*  
 Responsible for providing end user support to DOGNET users. Developed scripts using bash and ImageMagick for dynamic image re-sizing on the technical help docs provided by the Computer Science department website. Assisted in the maintenance of network computers, servers, and devices. Setup a Xen virtualization cluster for faculty and student use, as well as implemented a new virtualized VoIP laboratory.
- Nirvana Natural Spring Water** **Forestport, NY**  
 IT Manager *August 2006–August 2009*  
 Responsible for the administration and maintenance of the computer network infrastructure. Rebuilt the entire network infrastructure from the ground up upon my arrival. Implemented Gentoo Linux servers for the following functions; a custom scripted backup solution using bash, cron and rsync, a network video surveillance system using Zoneminder, a BIND DNS server for the company's external web domains, multiple Apache Web servers for an intranet web site as well as external web sites, a MySQL Database Server for inventory control and truck tracking, an Asterisk VoIP Server used as an intercom solution in production environments, and an OpenVPN server for remote access. Implemented Windows Server 2003 servers for the following functions; Active Directory, Exchange 2003, IIS Server with Exchange Webmail and ActiveSync, DNS/WINS for internal Windows network name resolution, Remote Installation Services, and Terminal Services. Implemented an Endian Linux Firewall solution to provide a robust firewall with proxy services and intrusion detection (snort). Developed and maintained a company intranet website, as well as multiple websites for Nirvana and Nirvana Transport. Also provided end user support, and installed fiber, and copper runs as well as wireless solutions for laptop users and warehouse scanning.
- Herkimer County Community College** **Herkimer, NY**  
 Teacher's Assistant *August 2005–May 2006*  
 Teacher's assistant to Professor John Cook of HCCC's Computer Network Technician program. Assisted in the deployment and maintenance of PCs, servers, and network devices in the department labs. Setup and deployed an Asterisk VoIP server for classroom demonstration & labs. Prepped student labs for class use.
- Ira D. Conklin and Sons Inc.** **Utica/Syracuse/Newburgh, NY**  
 Information Systems Management Specialist *August 2002–August 2005*  
 Network Administrator for all sites. Responsible for the deployment and maintenance of all network devices, servers, PC's, and laptops. Maintained a Windows NT active directory environment that was later migrated to a Windows Server 2003 mixed environment. Maintained a Windows NT Exchange mail server with IIS and webmail. Implemented a Cisco VPN Concentrator/Client VPN solution that connected each branch office to the main office in Newburgh as well as provided road warrior support for remote workers. Provided end user support to users in all three offices. Also served as a level 3 technician for C-Store chains all across New York State. Obtained the following industry certifications; Verifone Ruby POS systems installation and maintenance, Gilbarco/VeederRoot TLS Monitoring Systems installation and maintenance, Incon TLS Monitoring Systems installation and maintenance.



## Professional Accomplishment

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### Peer Reviewed Publications.....

Note: \* indicates undergraduate co-author

- **Bull, R.** & Matthews, J. Critical Analysis of Layer 2 Network Security in Virtualized Environments. *International Journal of Communication Networks and Distributed Systems*, Volume 17, No. 3. 2016.
- **Bull, R.**, Matthews, J., & Trumbull, K.\* VLAN Hopping, ARP Poisoning and Man-in-the-Middle Attacks in Virtualized Environments. *Defcon '24*, August 7th, 2016.
- Mihevc, J., **Bull, R.**, Merante, N., & Froberg, B. The Central New York Hackathon: A Case Study on the Collaborative Design and Implementation of a Regional Cyber Defense Event. *National Cybersecurity Institute Journal*, Volume 2, No. 2. October 15, 2015.
- Shipman, P.\*, **Bull, R.** Lab on a Stick. *SIGITE '15 Proceedings of the 16th Annual Conference on Information Technology Education*, 2015.
- **Bull, R.**, Matthews, J. Exploring Layer 2 Network Security in Virtualized Environments. *Defcon '23*, August 9th, 2015.
- **Bull, R.** Exploring Layer 2 Network Security in Virtualized Environments. *DerbyCon 4.0 - Family Rootz*, September 27th, 2014.
- **Bull, R.** Migrating a Voice Communications Laboratory to a Virtualized Environment. *SIGITE '13 Proceedings of the 14th annual ACM SIGITE conference on Information Technology education*, 2013.
- Hu, W., Hicks, A., Zhang, L., Dow, E., Soni, V., Jiang, H., **Bull, R.**, Matthews, J. A Quantitative Study of Virtual Machine Live Migration. *CAC '13 Proceedings of the 2013 ACM Cloud and Autonomic Computing Conference*, 2013.

### Invited Talks.....

Note: \* indicates undergraduate co-author

- **Bull, R.**, Network Security: VLAN hopping, ARP Poisoning and Man-In-The-Middle Attacks in Virtualized Environments. *Utica College Nexus Seminar Series*. Utica, NY. November 10th, 2017.
- **Bull, R.**, Merante, N., Design and Implementation of the CNY Hackathon Competition Platform. *NSA Centers of Academic Excellence Northeast Regional Resource Center Meeting*. Boston, MA. October 20th, 2017.
- Merante, N., **Bull, R.**, Leading a "Black Team": Systems Engineering for Regional Competitions. *NSA Centers of Academic Excellence Northeast Regional Resource Center Meeting*. Boston, MA. October 20th, 2017.
- **Bull, R.**, VLAN hopping, ARP Poisoning and Man-In-The-Middle Attacks in Virtualized Environments. *ANYCon 2017 - Albany, NY*. June 17th, 2017.

- Drzewiecki, S\*. Gudrian, A\*. **Bull, R.**, The Stuffer. *ANYCon 2017 - Albany, NY*. June 17th, 2017.
- **Bull, R.**, How your virtual machines can be hacked in a cloud environment. *HackCon#12 - Oslo, Norway*. Feb. 15th, 2017.
- **Bull, R.**, Penetration Testing - An Overview. *Fordham University at Lincoln Center - Invited Lecture*. May 29th, 2015.
- **Bull, R.** Exploring Layer 2 Network Security in Virtualized Environments - DHCP Attacks. *B-Sides Roc '15*, April 25th, 2015.
- **Bull, R.**, Merante, N., Vandermaas, J.\* Virtualized Lab Environments for Cost-Effective Hands-On Learning. *SUNY ITEC Wizards '14*, November 18th, 2014.

## Student Research Presentations

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*Note: \* indicates undergraduate student presenter*

- Koivuluoma, T\*. Utilizing Open Source Asterisk and SIP to Create Emergency Alert Systems *Utica College Student Research Day*, April 18th, 2018.
- Gudrian, A\*. Ingersoll, N\*. The Utilization of Drones in Wireless Network Auditing. *Utica College Student Research Day*, April 18th, 2018.
- Luce, S\*. Trumbull, K\*. Greenhouse Sensing and Automation. *Utica College Student Research Day*, April 19th, 2017. **Award: Best Poster**
- Drzewiecki, S\*. Gudrian, A\*. The Stuffer. *Utica College Student Research Day*, April 19th, 2017. **Award: Best Presentation**
- Trumbull, K\*. The Affects of ARP Poisoning Man-in-the-Middle Attacks in Virtualized Networks. *Utica College Student Research Day*, April 27th, 2016.

## Grants

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- **Utica College**  
*Faculty Professional Travel Fund,* *Fall 2019*
- **Utica College**  
*Faculty Leadership Fund,* *Summer 2019*
- **Utica College**  
*Faculty Leadership Fund,* *Spring 2018*
- **Utica College**  
*Faculty Professional Travel Fund,* *Spring 2018*

- **Utica College**  
Faculty Professional Travel Fund, Summer 2017
- **Utica College**  
Faculty Professional Travel Fund, Spring 2017
- **Utica College**  
Faculty Travel With Students Fund, Fall 2016
- **Utica College**  
Faculty Professional Travel Fund, Fall 2016
- **Utica College**  
Faculty Leadership Fund, Fall 2016
- **Utica College**  
Faculty Leadership Fund, Fall 2015
- **Utica College**  
Faculty Professional Travel Fund, Fall 2015

## Service

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- **Internet Engineering Task Force Delay Tolerant Networking (DTN)**  
Working Group Member July 2017–Present  
Attend quarterly international IETF working group meetings (*remotly and in person*), and participate on the IETF DTN mailing list to help review, edit, and comment on Internet and networking protocol proposals that are slated to become international networking standards. More information on the IETF DTN working group can be found at: <https://datatracker.ietf.org/wg/dtn/about/>
- **Internet Engineering Task Force Mobile Ad-Hoc Networking (MANET)**  
Working Group Member July 2017–Present  
Attend quarterly international IETF working group meetings (*remotly and in person*), and participate on the IETF MANET mailing list to help review, edit, and comment on Internet and networking protocol proposals that are slated to become international networking standards. More information about the IETF MANET working group can be found at: <https://datatracker.ietf.org/wg/manet/about/>
- **Central New York Hackathon** Utica, NY  
Co-Founder, Organizer, & Member of the Board of Directors April 2013–Present  
A regional intercollegiate offensive/defensive cybersecurity competition held at the end of each Fall and Spring semester designed to improve the state of cybersecurity education and more closely align academia with Central New York industry partners. Problem scenarios either task each team with penetrating a target to take control or defending their systems from attackers to maintain control. Competition design, experiences, and results recently accepted for publication in the National Cybersecurity Institute Journal.

- **Mohawk Valley Community College** **Utica, NY**  
*Computer Science / Cybersecurity Advisory Board Member* *August 2013–Present*  
I have been serving as an advisory board member for the Computer Science and Cybersecurity programs at Mohawk Valley Community College since 2013.
  
- **Herkimer College** **Herkimer, NY**  
*Computer Network Technician Program Reviewer* *August 2016*  
I was asked to serve as a program reviewer for the Computer Network Technician A.A.S. degree program at Herkimer College in the Fall of 2016 in order to assist them in fulfilling their five year program review requirements.

## Professional Societies

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- Internet Society *InterPlanetary Networking* Chapter Member
- Internet Society *CyberSecurity* Chapter Member