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SKILLS

Programming

Python, Java, C++, HTML, CSS, JavaScript, SQL, YANG

DevOps

AWS, Terraform, Ansible, Prometheus, Grafana, GitHub

Networking and Security

SDN, Openflow, CyberSecurity, TCP/IP, VMware

Vsphere, Citrix XenServer, OpenDayLight, CCNA,

Windows, Linux, Mininet, NS-2, PKI, Wireless/Wired

design and configuring

Basic Data analysis:

Tableau, Hadoop, Excel

EXPERIENCE

Assistant Professor in Residence, University of Connecticut, Storrs CT

August 2020- Present

- Teaching CyberSecurity lab that provides hands-on training in diverse computer security aspects including networking, architecture, systems, cryptography, cloud technologies, and IoTs
- Helping in design, purchasing and configuring required HW/SW lab equipment
- Managing the lab infrastructure and prepare testing environments for student training
- Working on a research project for enhancing PKI certificate transparency challenges and security

DevOps Fellow, Insight, NY

May 2020- Present

- Built an automated and scalable system using Terraform for monitoring, logging, and sending alarms of blockchain networks. The developed system relies on python developed business-specific metrics exporters running on blockchain nodes and a Prometheus server for extracting information
- Built dashboards and an alerting system using Alert-manger and Grafana to facilitate visualization and monitoring incidence for real-time interventions.

Teaching Assistant, University of Connecticut, Storrs CT

Aug 2014 - May 2020

- Prepared Cyber-Security lab infrastructure by setting ESXi VMs, configuring networks, and preparing hacking devices to provide Hand-on training of Cyber-Security Concepts.

Doctoral Research Fellow (GAANN), University of Connecticut, Storrs CT

Jan 2014 - May 2018

- Researched and investigated the effectiveness of using the Open-Daylight SDN controller in supporting different topologies, different network sizes, and providing QoS for applications.

Technical Consultant, Information and Communication technology project, Egypt

Jan 2008 - May 2013

- Researched, analyzed, and estimated the requirement and budget for upgrading universities infrastructure and learning systems needed for a project that enhanced the IT infrastructure for 20 different universities.
- Technically coordinated the deployment, testing, and operation of the MIS project and Live@edu project to provide services for students of 20 universities.

Technical Member, Education Development Fund (EDF), Egypt *Jan 2011 - Jun 2013*

- Prepared and managed RFPs for IT hardware and software in 5 schools and a technology college
- Designed networks and proposed enhancement for the learning infrastructure
- Tested network solutions and learning system equipment, including network equipment (wired/wireless), UPS, VC, Blade Servers, IP telephony, camera systems, printers, and Smartboards

Cisco Academy Certified Instructor, CISCO Academy, Tanta University, Egypt *Feb 2008 - present*

- Taught CCNA and provided hands on training.
- Facilitated online academy exams and mentored students working towards CCNA certifications.

Teaching Assistant, Tanta University, Egypt *Feb 2007 - Jan 2014*

- Taught and prepared labs for “Computer Networks”, “Information and Network Security”, and “Object-Oriented and Data structure” courses which included around 200 students per session.
- Designed, maintained and supervised Networking and Computer programming labs to provide students hands-on learning of networking and computer science concepts

PROJECTS

Southern New England Industrial Assessment Center at the University of Connecticut and the University of New Haven *2021-present*

- Serving as a Co-PI to offer: 1) free and comprehensive audit and consulting services to small-to-medium enterprises (SMEs) for strengthening cyber security related activities; 2) developing train and assessment modules to improving industrial energy efficiency through hands-on, real-world experience by conducting student team assessments of SMEs; and 3) to provide outreach and education opportunities to non- participating SMEs.

CTng: Secure Certificate and Revocation Transparency *2020-present*

- working on Certificate Transparency (CT), as a standard extension of classical Web-PKI. We proposed CTng, an evolutionary extension of CT, with comparable efficiency and complexity. CTng addresses the major issues with current CT: it ensures revocation status transparency and NTP, preserves privacy, allows offline certificate validation, and facilitates resilience against DoS. We presented a performance evaluation of our open-source implementation of CTng, showing its efficiency and scalability.

QoS framework for SDN-based networks *2019*

- Developed python modules for the OpenDaylight controller to enhance QoS. The framework was tested in an SDN mininet based environment of virtual Openflow switches and Linux hosts

Software-defined extreme-scale networks for big data applications *2015*

- Tested the effectiveness of using SDN based networks to support a Hadoop cluster. Testdfsio and terasort benchmarks were tested to check the effectiveness of having an OpenDaylight controller over traditional forwarding. Docker containers were used to host the Hadoop cluster nodes that were connected to the virtual Openflow switch of the fat-tree topology

- A moving robot with heat and sound sensors, live streaming and web control capability to monitor homes remotely

Enhancing AODV Routing Protocol In MANETs

2012

- Proposed enhancement for AODV Routing packets to announce the local power of forwarding nodes to enhance the overall network power behavior. NS-2 simulator and C++ were used to construct a new packet format and test the newly proposed protocol

EDUCATION

University of Connecticut, USA	2020	Ph.D. in Computer Science and Engineering
University of Connecticut, USA	2018	MS.c in Computer Science and Engineering
Tanta University, Egypt	2013	MS.c in Computer and Control Engineering
Information technology Institute, Egypt	2007	Diploma in Computer Networking
Tanta University, Egypt	2006	BS.c. in Computer and Control Engineering

Volunteer

Member of Islamic Center of University Connecticut	Jan 2014 – present
Member of a charity Association (Kelma)	Aug 2005 – Jun 2007
Vice president of Faculty Student Union	Aug 2005 – Jun 2006
President of the University’s committee of social and cultural affairs	Aug 2005 – Jun 2006
Faculty of Engineering Student Union member	Aug 2001 – Jun 2005

List of Publications

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- Hemi Leibowitz, Haitham Ghalwash, Ewa Syta, Amir Herzberg: CTng: Secure Certificate and Revocation Transparency. *IACR Cryptol. ePrint Arch. 2021: 818(2021)*
 - H. Ghalwash and C.-H. Huang, “A congestion control mechanism for SDN-based fat-tree networks,” in *High Performance Extreme Computing Conference (HPEC’20)*, 2020.
 - H. Ghalwash and C. Huang, “QoS for SDN-Based Fat-Tree Networks,” in *Lecture Notes in Networks and Systems, vol 70.*, Springer, Cham, 2020, pp. 691–705.
 - H. Ghalwash and C. H. Huang, “A QoS framework for SDN-Based networks,” *Proc. - 4th IEEE Int. Conf. Collab. Internet Comput. CIC 2018*, pp. 98–105, 2018.
 - H. Ghalwash and C. Huang, “Software-Defined Extreme Scale Networks for Bigdata Applications,” in *High Performance Extreme Computing Conference (HPEC’17)*, 2017.
 - H. Ghalwash and C. Huang, “On SDN-Based Extreme-Scale Networks,” in *High Performance Extreme Computing Conference (HPEC)*, 2016.

- T. Eltobely, M. Faheem, A. Badr, H.Ghalwash “Enhancing AODV Routing Protocol for Better Energy Utilization and Packets Delivery In MANETs”, *Egyptian Computer Science Journal, ECS, Vol. 36 No. 3, September 2012* ISSN-1110-2586
- H. Ghalwash and C.-H. Huang, “QoS guarantee using Active/Passive measurements in SDN-based Networks,” (Inprogress)