DIOGO OLIVEIRA

RESEARCH AND TEACHING INTERESTS

cybersecurity, information security and assurance, malware analysis, networking, disaster recovery and survivability, machine/deep learning, pentesting/ethical hacking, computer forensics, cloud computing, software engineering, Internet of Things (IoT), optimization algorithms.

EDUCATION

Ph.D. in Electrical Engineering (emphasis in Cybersecurity)- University of South Florida, *Tampa, FL - 2018*

- Dissertation "*Multi-Objective Provisioning in Network Function Virtualization Infrastructure*"

M.S. in Computer Engineering (emphasis in Cybersecurity) – Federal University of Goias, *Brazil - 2009*

- Research thesis *"On the Implementation of a PLC Network Management System Using SNMPv3"*

B.S. in Computer Networks - Salgado de Oliveira University, *Brazil - 2005*

ACADEMIC EMPLOYMENT AND TEACHING EXPERIENCE

Assistant Professor of Cybersecurity, Pennsylvania State University, College of Information Sciences and Technology, *Monaca, PA, July 2022-current*

- Taught online and face-to-face undergrad and graduate courses.
- Conducted research in cybersecurity and network performance, published papers, wrote grant proposals.
- Provided academic services, including member of the Faculty Congress Committee, member of the International Students Advisory Committee, New Student Orientation, Cybersecurity Club Advisor, undergrad and graduate student advising.
- Received the Open Educational Resources (OER) Leads Faculty Adoption Grant for redesigning courses with the adoption of free materials.
- Received the Experiential Digital Global Engagement (EDGE) Faculty Award for designing and conducting a collaborative project between Penn State Beaver students and the University of Osijek students.
- Taught the following courses: Cyber Incident Response, Malware Analytics, Information Security Management, Cyber Defense Studio, Overview of Information Security, Risk Analysis, Legal and Regulatory Environment of Information Science and Technology, Discrete Mathematics, Praxis Research.

Assistant Professor of Cybersecurity, Florida State University, School of Information, *Tallahassee, FL, Aug. 2018-Aug. 2022*

- Taught online and face-to-face undergrad and graduate courses.
- Conducted research in cybersecurity and network performance, published papers, wrote grant proposals.
- Provided academic services, including member of the Faculty Committee, member of the Faculty Search Committee, member of the Data Management Committee, undergrad and graduate student advising.
- Taught the following courses: Network Administration for the Information Professional, Advanced Information Security, Database Concepts, Introduction to Data Networks for Information Professionals, Introduction to Information Technologies, Database Management Systems, Organizational Information Security, Directed Individual Study, Research Collaboration.

Doctoral Researcher, Univ. of South Florida, Dept. of Electrical Engineering, *Tampa, FL, Aug. 2015-May 2018*

- Research assistant (RA): developed advanced network function virtualization (NFV) schemes with focus on survivability for large-scale disaster conditions. Designed novel joint routing and placement schemes based upon optimization and heuristics-based algorithms.

- Served as teaching assistant (TA) for Senior Design I EEL4906 course on project planning and design (over 60 students). Assisted with lectures, demos, and grading.
- Assisted Dr. Nasir Ghani with his duties in the Florida Center for Cybersecurity (FC2)/Cyber Florida.

Visiting Scholar, Univ. of South Florida, Dept. of Electrical Engineering, *Tampa, FL, Aug. 2014-Aug. 2015*
- Visiting scholar through the "Science Without Borders" Brazilian Scholarship Program, faculty host Dr. Stephen Saddow.

Associate Professor, National Commercial Learning Service (SENAC), *Brazil, July 2010 – July 2014*
- Taught undergraduate and certification courses, including Information Security, Virtual Private Networks, Firewalls, Computer Networks, and Operating Systems Security.

Associate Professor, National Industrial Learning Service (SENAI), *Brazil, July 2007 – Jan. 2014*
- Taught undergraduate and certification courses, including Operating Systems, Information Security, Web Servers and Applications, Broadband Networks, Computer Networks, and Linux OS.

COMMITTEE MEMBER AND ACADEMIC SERVICES

Pennsylvania State University
- Member of the PSU Beaver International Student Advisory Committee. The committee focused on improving international students' outreach.
- Member of the PSU Beaver Faculty Congress Committee. The committee focused on identifying challenges and opportunities for the Penn State Beaver faculty community.

Florida State University
- Member of the School of Information's Personnel Committee. The committee was responsible for identifying and proposing faculty-related topics, such as faculty searches, training, and mentoring.
- Member of the School of Information's Data Management Committee. The committee was responsible for identifying, deploying and managing data management solutions for the department.
- Doctoral Committee Member. Revised PhD students' research, provided feedback to assist students in achieving their research goals.

Journals and Conferences
- Journal reviewer and Technical Program Committee Member for several journals and conferences.

STUDENT ADVISING AND SUPERVISION

Pennsylvania State University
- Doctorate student advisor: 2 doctorate students
- Undergraduate Student Advisor: advised 4 undergraduate students, assisting them with their course choices, scheduling, and career orientation

Florida State University
- Graduate Teaching Assistant Advisor: Supervised 3 graduate teaching assistants, which assisted me with assignments and grading.
- Doctorate student advisor: 1 PhD student
- Undergraduate Research Advisor: mentored 4 undergraduate students to conduct research under the Undergraduate Research Opportunity Program (UROP)
- Independent Studies Advisor: supervised 2 PhD students on Direct Individual Studies

RESEARCH PROJECT PARTICIPATION

"Towards an Efficient Risk-Aware Survivability and Restoration Solution for Virtual Network Service Chains", First Year Assistant Professor Grant, $20,000, 2019.

- Project focused on developing machine learning methods for disaster recovery and survivability techniques against hurricane hits
- Funded by The Florida State University
- Principal Investigator (PI)

"Implementation of Paradigms for Survivability of Cyber-Infrastructure Backbone Networks Against WMD Attacks Over Real Network Environments", US Defense Threat Reduction Agency (DTRA) Fundamental Research Project (HDTRA1-13-C-0027), $1,050,000, 2015-2017.

- Project focused on developing advanced network control software to evaluate the impact of large-scale disaster events in live operational networks/testbeds. Partners include the University of New Mexico (UNM), University of South Florida (USF), and University of Maryland (UMD).
- Funded by the Defense Threat Reduction Agency (DTRA)
- Lead developer and researcher

"A Management Model for PLC Telecommunication Platforms", CELG Research Grant, $150,000, 2008-2009

- Project focused on designing an automated broadband powerline communications/powerline communications (BPL/PLC) management system
- Funded by CELG/Brazil
- Lead developer and researcher

AWARDS & ACHIEVEMENTS

- Penn State University Open Educational Resources (OER) Leads Faculty Adoption Grant, $1,000 award
- Penn State University Experiential Digital Global Engagement (EDGE) Faculty Award, $650 award
- Graduate Faculty Status (GFS) promotion – Pennsylvania State University
- Graduate Faculty Status (GFS) promotion – Florida State University
- University of South Florida Graduate Research Assistant Scholarship, 2015-Present
- Science Without Borders (Ciência Sem Fronteiras) Scholarship, Brazil (2014-2015)
- Electric Company of Goias (CELG) Research & Development Scholarship, Brazil (2008-2009)
- Centro Nacional de Pesquisa (CNPq) Scholarship, Brazil (2007-2008)

INDUSTRY EXPERIENCE

Cybersecurity Consultant, Cleverdome Inc, remote, September 2019 - current

- Role: cyber security engineering - leading role.
- Provides consulting services in information and cyber security, including (but not limited to): threat intelligence, threat hunting, penetration testing, vulnerability assessment, log analysis and filtering, network traffic analysis, forensic analysis, network resiliency design and deployment.

Instructor, HowToNetwork.com, remote, September 2019 - current

- Role: instructor and content creator.
- Designs and creates training content to prepare students for IT certification exams, such as Linux LPI Essentials, CompTIA Linux+, CompTIA CySA+, CompTIA Pentest+, EC2 CISSP, EC-Council Certified Ethical Hacker, among others.

Network Analyst, Federal University of Goias, Goiania, Brazil, January 2009 – July 2015

- Extensive experience with installation, configuration, and management of routers, switches, firewalls, Linux servers, virtual machines and wireless controllers in campus enterprise setting.
- Designed and coded network automation scripts, managed application patches, security, and network configuration processes.

Network Analyst, Agrosol Technology, Goiania, Brazil, May 2005 – May 2008

- Helped install, maintain, and troubleshoot various networking gears (routers, switches, etc).

- Served as official Mandriva Linux instructor for basic, intermediate, and advanced Linux training.

PUBLICATIONS

Peer Reviewed Journals

A. Aldalbahi, M. Jasim, F. Shahabi, A. Mazin, N. Siasi, **D. Oliveira**, "Deep Learning for Primary Sector Prediction in FR2 New Radio Systems", *IEEE Access*, Volume 9, Issue 18, Dec. 2021.

M. Rahouti, M. Ayyash, S. Jagatheesaperumal, **D. Oliveira**, "Incremental Learning Implementations and Vision for Cyber Risk Detection in IoT", *IEEE Internet of Things Magazine*, Volume 4, Issue 3, Sept. 2021.

D. Oliveira, N. Ghani, T. Lehman, X. Yang, M. Hayat, E. Bou-Harb, "SDN Testbed for Evaluation of Large Exo-Atmospheric EMP Attacks", I*EEE Communications Magazine*, Volume 57, Issue 1, Dec. 2018.

D. Oliveira, "Future Challenges Addressing NFV Security and Survivability", *International Journal of Advanced Computational Engineering and Networking,* Volume 6, Issue 11, Nov. 2018.

D. Oliveira, J. Crichigno, N. Ghani, "On Sensitive Weighted Joint Routing and Placement Schemes for Network Function Virtualization", *Infocommunications Journal*, Volume 9, Issue 4, Dec. 2017.

D. Oliveira, G. Santos, M. Rezende, "Case of Study: Routing Protocols Used by Internet Service Providers", *Tecnologia da Informação Aplicada* (a SENAI Magazine), Vol. 2, 2013, pp. 10-15.

Books and Book Chapters

D. Oliveira, M. Rahouti, A. Jaesim, N. Siasi, L. Ko, "Can the Inter Planetary File System Become an Alternative to Centralized Architectures?", *Human Interaction, Emerging Technologies and Future Systems V*, Proceedings of the 5th International Virtual Conference on Human Interaction and Emerging Technologies, Volume 319, 2022, Springer, pp. 597-604, ISBN 978-3-030-85539-0, DOI 0.1007/978-3-030-85540-6.

S. Ho, **D. Oliveira**, R. Rathi, "Consciousness of Cyber Defense: Boundary Objects for Expansive Learning Through Creation of Contradictions", *HCI in Business, Government and Organizations. Information Systems and Analytics,* HCI International Conference Proceedings, 2019, Springer, pp. 338-353.

D. Oliveira, "Multi-Objective Resource Provisioning in NFV Infrastructures", Lambert Academic Publishing, ISBN 978-613-9-92860-6, 2018.

Peer Reviewed Conference Papers

D. Oliveira, M. Ray, R. Lomotey, M. Rahouti, "Memory Feature Engineering for Performance-Gain in Obfuscated Malware Detection Using Machine Learning and Sensitivity Analysis", 2024 IEEE Pacific Rim Conference on Communications, Computers and Signal Processing. Victoria, Canada, August 2024. (Accepted)

L. Lima, V. Cavalcante, M. Sousa, C. Fleury, **D. Oliveira**, E. Freitas, "Artificial Intelligence in Support of Welfare Monitoring of Dairy Cattle: A Systematic Literature Review", 2021 International Conference on Computational Science and Computational Intelligence, Las Vegas, NV, July 2021.

R. Alcantara, A. Freitas Neto, **D. Oliveira**, E. Freitas, "Imagering Hurricane Forecasting based on Artificial Intelligence: A Systematic Review", The 2021 World Congress in Computer Science, Computer Engineering & Applied Computing, Las Vegas, NV, July 2021.

D. Oliveira, M. Rahouti, A. Jaesim, N. Siasi, L. Ko, "Can the InterPlanetary File System become An Alternative to Centralized Architectures?", *5th International Conference on Human Interaction & Emerging Technologies*, Paris, France, Aug. 2021.

M. Jasim, N. Sasi, S. Malapaka, **D. Oliveira**, O. Ugweje, "A Single-Tier Fog Architecture for Delay-Sensitive and Computation-Intensive SFC Requests", 11th IEEE Annual Information Technology, Electronics and Mobile Communication Conference (IEMCON), Virtual, Nov. 2020.

A. Jaesim, N. Sasi, A. Aldalbahi, **D. Oliveira**, N. Ghani, "Dual-Beam Analog Beamforming for mmWave Communications", *Annual Ubiquitous Computing, Electronics & Mobile Communication Conference*, New York, NY, Oct. 2019.

M. Rahouti, K. Xiong, **D. Oliveira**, T. Chin, P. Hu, "A Preemption-Based Timely Software Defined Networking Framework for Emergency Response Traffic Delivery", *International Conference on High-Performance Computing and Communications*, Zhangjiajie, China, Aug. 2019.

S. Ho, **D. Oliveira**, R. Rathi, "Consciousness of Cyber Defense: Boundary Objects for Expansive Learning through Creation of Contradictions", *HCI International*, Orlando, FL, July 2019.

D. Oliveira, M. Pourvali, J. Crichigno, E. Bou-Harb, M. Rahouti, N. Ghani, "An Efficient Multi-Objective Survivability Scheme for Mapping and Routing of Virtual Functions in Failure Scenarios", *IEEE International Conference on Software Defined Systems*, Rome, Italy, June 2019 (accepted).

A. Shaikh, **D. Oliveira**, "Informal IT and Routine Activity Theory – A Theoretical Review", IEEE Southeastcon, Huntsville, AL, April 2019.

S. Ho, **D. Oliveira**, R. Rathi, "The Shield and The Sword: Expanding Learning in Cyber Defense Through Competition", iConference, College Park, MD, March 2019.

D. Oliveira, "Future Challenges Addressing NFV Security and Survivability", *International Conference on Science, Engineering & Technology*, Sao Paulo, Brazil, September 2018.

D. Oliveira, J. Crichigno, N. Siasi, E. Bou-Harb, N. Ghani, "Joint Mapping and Routing of Virtual Network Functions for Improved Disaster Recovery Support", *IEEE SoutheastCon 2018,* Saint Petersburg, FL, April 2018.

J. Crichigno, **D. Oliveira**, M. Pourvali, N. Ghani, "A Routing and Placement Scheme for Network Function Virtualization", *40th International Conference on Telecommunications and Signal Processing (TSP)*, Barcelona, Spain, July 2017.

D. Oliveira, M. Pourvali, H. Bai, N. Ghani, T. Lehman, X. Yang, M. Hayat, "A Novel Automated SDN Architecture and Orchestration Framework for Resilient Large-Scale Networks", *IEEE SoutheastCon 2017*, Charlotte, NC, April 2017.

D. Oliveira, C. Silva, W. Calixto, A. Alves, V. Gomes, J. Domingos, "Heuristic Methodology for Horizontal Multilayer Soil Stratification", *16th IEEE International Conference on Environment and Electrical Engineering*, Florence, Italy, June 2016.

C. Silva, **D. Oliveira**, T. Pires, J. Nerys, P. Barbosa, W. Calixto, A. Alves, "Optimization of Grounding Grid's Multidesign Geometry", *16th IEEE International Conference on Environment and Electrical Engineering*, Florence, Italy, June 2016.

T. Pires, J. Nerys, C. Silva, **D. Oliveira**, C. Silva, W. Calixto, A. Alves, "Computation of Resistance and Potential of Grounding Grids in Any Geometry", *16th IEEE International Conference on Environment and Electrical Engineering*, Florence, Italy, June 2016.

T. Pires, C. Silva, **D. Oliveira**, J. Nerys, A. Alves, W. Calixto, "Computation of Grounding Grids Parameter on Unconventional Geometry", *2015 Chilean Conference on Electrical, Electronics Engineering, Information and Communication Technologies (Chilecon 2015)*, Chile, October 2015.

T. Pires, C. Silva, W. Calixto, **D. Oliveira**, A. Alves, E. Domingues, J. Domingos, G. Furriel, "Simulation and Determination of Grounding Grid Parameters in Non-Symmetrical Shapes", *13th IEEE Brazilian Power Electronics Conference & 1st Southern Power Electronics Conference*, Brazil, December 2015.

D. Oliveira, W. Calixto, A. Alves, C. Silva, I. Mota, "Multilayer Soil Parameters Estimation Optimization Using Genetic Algorithms", *International Conference on Grounding and Earthing & International Conference on Lightning Physics and Effects*, Manaus, Brazil, 2014.

D. Oliveira, T. Vasques, F. Vieira, G. Deus, M. Castro, S. Granato, E. Souza, J. Goncalves, O. Oliveira, A. Alves, R. Badur, "A Management System for PLC Networks Using SNMP Protocol", *IEEE International Symposium on Power Line Communications & Its Applications*, Rio de Janeiro, Brazil, March 2010.

T. Vasques, **D. Oliveira**, S. Granato, F. Vieira, G. Deus, M. Castro, A. Bittar, A. Alves, R. Badur, "Performance Analysis of a Joint PLC and Satellite Communication System", *IEEE International Symposium on Power Line Communications & Its Applications,* Rio de Janeiro, Brazil, March 2010.

D. Oliveira, T. Vasques, G. Deus, A. Bittar, S. Granato, F. Vieira, F, "Security System for Powerline Communication Networks and Protocol SNMPV3", *VI Congresso de Pesquisa, Ensino e Extensão*, Goiânia, Brazil, October 2009.

D. Oliveira, A. Alves, R. Badur, A. Bittar, M. Castro, G. Deus, S. Granato, E. Souza, T. Vasques, "A Study of SNMP Developments Regarding to Security and Performance"*, III Workshop de Arquitecturas, Redes y Sistemas Operativos*, Congreso Argentino de Ciencias de la Computación, Chilecito, Argentina, October 2008.

Poster Presentations

D. Oliveira, "Towards an Efficient Risk-Aware Survivability and Restoration Solution for Virtual Network Service Chains Against Hurricane Stressor Events", *First Year Assistant Professor Workshop at Florida State University*, Tallahassee, FL, Sept. 2019.

D. Oliveira, "Network Recovery After Large Scale Nuclear EMP Attacks", *Florida Board of Governors (FL BoG) Safety & Security Summit,* Tampa, FL, June 19th, 2017.

REFERENCES

Name: Dr. Nasir Ghani
Organization: University of South Florida
Position: Full Professor
Phone Number: (813) 974-4772
Email: nghani@usf.edu

Name: Dr. Mohamed Rahouti
Organization: Fordham University
Position: Assistant Professor
Phone Number: (813) 315-0306
Email: mrahouti@fordham.edu

Name: Dr. Mohammed Jasim
Organization: University of Washington
Position: Assistant Professor
Phone Number: (203) 508-3004
Email: jasim@uw.edumountunion.edu