Ioannis (Yannis) Zografopoulos

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RESEARCH INTERESTS

- Electric grid security and resilience with integration of renewable and distributed energy resources
- Cyberphysical systems and Internet-of-Things (IoT)
- Hardware security and embedded systems security
- Industrial system and critical infrastructure security
- Real-time controller- and hardware- in-the-loop simulation

WORK EXPERIENCE

- **University of Massachusetts Boston**   **Boston, Massachusetts**
  Assistant Professor at Engineering Department
  PI at Infrastructure Cybersecurity & Resilience (ICARUS) Lab   *Jan 2024 - Present*

- **Imperial College**   **London, UK**
  Visiting Academic   *Jun 2022 - Aug 2022*

  Investigate the security of cyberphysical energy systems with distributed energy resources (DER). Identify communication protocol vulnerabilities and device or firmware security oversights in power system critical infrastructure. Design mitigation techniques to overcome security challenges and propose methods to improve the cybersecurity standpoint of DERs.

- **Red Balloon Security**   **Manhattan, New York**
  Security Research Intern   *May 2021 - Aug 2021*

  Perform cybersecurity analyses for industrial and commercial devices used in critical deployments. Reverse engineering and penetration testing of devices to identify vulnerabilities and potential attack entry points. Suggest security countermeasures and mitigation schemes to enhance the security of industrial and commercial embedded devices.

- **FSU - Center for Advanced Power Systems (CAPS)**   **Tallahassee, Florida**
  Graduate Research Assistant at Decision & Secure Systems lab (DSSlab)   *Jan 2019 - Apr 2021*

  Investigate and identify vulnerabilities that can challenge the confidentiality, integrity, or availability of power grid assets. Design hardware-based protection mechanisms and risk mitigation techniques for cyberthreats, enhancing the cybersecurity of the assets in scope, conforming to current cybersecurity standards and design best practices.

- **National Centre for Research & Technology Hellas (CERTH)**   **Volos, Greece**
  Research Engineer   *Jul 2015 - Dec 2018*

  Design, programming, measuring and evaluation of analog and digital circuits focusing on minimizing power consumption for IoT applications, utilizing harvesting scenarios, duty cycling and low-power wake-up schemes with participation in multiple European research programs.

EDUCATION

King Abdullah University of Science and Technology   **Thuwal, Saudi Arabia**
Ph.D. in Electrical & Computer Engineering, CEMSE division   *Sep 2021 - Jul 2023*
Advisor: Assistant Prof. Charalambos Konstantinou

Florida State University   **Tallahassee, Florida**
Ph.D. candidate in Electrical & Computer Engineering, dep. ECE   *Jan 2019 - Aug 2021*
Advisor: Assistant Prof. Charalambos Konstantinou

University of Thessaly   **Volos, Greece**
M.Sc. in Science and Technology of Electrical & Computer Engineering   *Nov 2015*
University of Thessaly   **Volos, Greece**
Diploma (5-year B.Eng. + M.Eng.) in Computer, Communications & Networks Engineering   *Jul 2014*

TEACHING & MENTORING EXPERIENCE

University of Massachusetts Boston   **Boston, Massachusetts**
Course and Lab Instructor   *Jan 2024 - Present*

Currently instructing the ENGIN 241: Digital Systems course, including its associated laboratory sessions. Scheduled to teach ENGIN 344: Intro to Cyber-Physical Energy Systems in Spring 2025.

Mentor for the Institute of Diversity Sciences Faculty Fellows Program   *Sep 2024 - Present*

Fostering the academic growth of 2 Hispanic undergraduate students, while offering them opportunities to engage in mentored research experiences in preparation for their graduate studies applications.

King Abdullah University of Science and Technology   **Thuwal, Saudi Arabia**
Teaching Assistant   *Sep 2022 - May 2023*

Assisted with the design of the lab assignments for the Computer Systems Security (CS230) course, helped students with any questions that could arise on the course material, and also graded their reports.

Graduate Student Mentor

Guided **Alyah Alfageh** with her M.Sc. thesis investigating process-aware attacks targeting the water desalination critical infrastructure.

Florida State University   **Tallahassee, Florida**
Teaching Assistant   *Jan 2020 - May 2021*

Supported the Cyber-Physical Systems Security (EEL4930/EEL5930) course delivery by co-creating and grading assignments, holding office hours to answer student questions about course content and the programming assignments, and also proctored exams.

Undergraduate Student Mentor

Supervised and held weekly meetings with **Alex Rodriguez**, who investigated the importance of programmable logic controllers for industrial applications and the implications of potential compromises. Introduced **Supriya Palli** to the concepts of reverse engineering and fundamentals of malware analysis.

University of Thessaly   **Volos, Greece**
Teaching and Lab Assistant   *Sep 2014 - Dec 2018*

Served as the teaching assistant for Advanced Electronics (CE335) and the lab assistant for both the graduate Analog VLSI (CE536) and the undergraduate Circuit Analysis (CE230) courses. Supported the mixed graduate and undergraduate population of the classes with their weekly assignments, created projects, and provided feedback to students working on their individual projects.

AWARDS AND ACHIEVEMENTS

- Institute of Diversity Sciences Fellowship award by Alfred P. Sloan Foundation, Sep 2024
- IEEE PES Technical Committee Recognition Award for Outstanding Technical Report, Jul 2024
- Shortlisted for the IEEE Power and Energy Society Outstanding Dissertation Award, Jul 2024
- Grant recipient for **NSF** Secure and Trustworthy Cyberspace (SaTC) Aspiring PI Workshop, Mar 2024
- Briefing presentation at **Black Hat**, Nov 2023
- Tutorial presentation at **IEEE SmartGridComm**, Oct 2023
- 1st **place** at Cyber Security Awareness Week - Hack My Robot (CSAW-HMR), Nov 2022
- Finalist at Cyber Security Awareness Week CTF competition, Nov 2022
- Black Hat USA Student Scholarship, Aug 2022
- 1st **place** at Cyber Security Awareness Week - Embedded Security Challenge (CSAW-ESC), Nov 2021
- First-Class Honors, **MSc Scholarship award**, Nov 2015
- First-Class Honors, ranked 7th in graduating class, Jul 2014

PUBLICATIONS

- **I. Zografopoulos**, C. Konstantinou. "Event-triggered islanding in inverter-based grids." In: Electric Power Systems Research, 2025.
- **I. Zografopoulos**, et al. "Cyber-Physical Interdependence for Power System Operation and Control." In: IEEE Transactions on Smart Grid, 2025.
- A. Srivastava, J. Zhao, H. Zhu, F. Ding, S. Lei, **I. Zografopoulos**, R. Haider, S. Vahedi, W. Wang, G. Valverde, A. Gomez-Exposito. "Distribution System Behind-the-Meter DERs: Estimation, Uncertainty Quantification, and Control." In: IEEE Transactions on Power Systems, 2024.
- A. A. Jahromi, A. Srivastava, A. Chawla, B. Nguyen, B.Tan, S. Bu, C. Li, C. Konstantinou, F. Teng, P. Goli, and **I. Zografopoulos**, et al. "Cyber-Physical Interdependence for Power System Operation and Control." In: IEEE Power & Energy Society General Meeting, 2023.
- **I. Zografopoulos**, N. D. Hatziargyriou, C. Konstantinou. "Distributed Energy Resources Cybersecurity Outlook: Vulnerabilities, Attacks, Impacts, and Mitigations." In: IEEE Systems Journal, 2023.
- K. Katuri, **I. Zografopoulos**, H. T. Nguyen, C. Konstantinou. "Experimental Impact Analysis of Cyberattacks in Power Systems using Digital Real-Time Testbeds." In: 2023 IEEE Serbia PowerTech, IEEE, 2023.
- S. Islam, **I. Zografopoulos**, M.T. Hossain, S. Badsha, C. Konstantinou. "A resource allocation scheme for energy demand management in 6G-enabled smart grid." In: 2023 IEEE Power & Energy Society Innovative Smart Grid Technologies Conference (ISGT), pp. 1-5. IEEE, 2023
- **I. Zografopoulos**, A. P. Kuruvila, K. Basu, C. Konstantinou. "Timeseries-based Detection and Impact Analysis of Firmware Attacks in Microgrids." In: Energy Reports, vol. 8, pp. 11221-11234, 2022.
- **I. Zografopoulos**, P. Karamichailidis, A. T. Procopiou, F. Teng, G. C. Konstantopoulos, C. Konstantinou. "Mitigation of Cyberattacks through Battery Storage for Stable Microgrid Operation." In: IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids, 2022.
- S. Rath, **I. Zografopoulos**, P.P. Vergara, V. C. Nikolaidis, C. Konstantinou. "Behind Closed Doors: Process-level Rootkit Attacks in Cyber-physical Microgrid Systems." In: IEEE Power & Energy Society General Meeting, 2022.
- **I. Zografopoulos**, C. Konstantinou. "Detection of Malicious Attacks in Autonomous Cyber-Physical Inverter-Based Microgrids." In: IEEE Transactions on Industrial Informatics, 2021.
- A. P. Kuruvila, **I. Zografopoulos**, K. Basu, C. Konstantinou, "Hardware-Assisted Detection of Firmware Attacks in Inverter-Based Cyberphysical Microgrids". In: International Journal of Electrical Power & Energy Systems, vol. 132, 2021.
- **I. Zografopoulos**, C. Konstantinou, N. G. Tsoutsos, D. Zhu, R. Broadwater, "Security Assessment and Impact Analysis of Cyberattacks in Integrated T&D Power Systems". In: 9th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, 2021.
- C. Xenofontos, **I. Zografopoulos**, C. Konstantinou, A. Jolfaei, M. K. Khan, K.K.R. Choo, "Consumer, Commercial and Industrial IoT (In)Security: Attack Taxonomy and Case Studies". In: IEEE Internet of Things Journal, 2021.
- S. Rath, **I. Zografopoulos**, C. Konstantinou. "Stealthy Rootkit Attacks on Cyber-Physical Microgrids". In: Proceedings of the Twelfth ACM International Conference on Future Energy Systems (e-Energy '21), pp. 294–295, 2021
- **I. Zografopoulos**, J. Ospina, X. Liu, C. Konstantinou, "Cyberphysical Energy Systems Security: Threat Modeling, Risk Assessment, Resources, Metrics, and Case Studies". In: IEEE Access, vol. 9, 2021.
- **I. Zografopoulos** and C. Konstantinou, "DERauth: A Battery-based Authentication Scheme for Distributed Energy Resources". In: IEEE Computer Society Annual Symposium on VLSI (ISVLSI), pp. 560-567, 2020.
- **I. Zografopoulos**, J. Ospina, and C. Konstantinou, "Harness the Power of DERs for Secure Communications in Electric Energy Systems". In: IEEE 38th International Conference on Computer Design (ICCD), 2020.
- J. Ospina, **I. Zografopoulos**, X. Liu, C. Konstantinou, "DEMO: Trustworthy Cyberphysical Energy Systems: Time-Delay Attacks in a Real-Time Co-Simulation Environment". In: 2020 Joint Workshop on CPS&IoT Security and Privacy (CPSIoTSec), 2020.
- A. Sayghe, Y. Hu, **I. Zografopoulos**, X. Liu, R. G. Dutta, Y. Jin, C. Konstantinou, "A Survey of Machine Learning Methods for Detecting False Data Injection Attacks in Power Systems". In: IET Smart Grid, 2020.

SERVICE TO RESEARCH COMMUNITY

- **Chair** of the IEEE Task Force on Resilient and Secure Large-Scale Energy Internet Systems
- Reviewer for IEEE Transactions on Power Systems, IEEE Transactions on Smart Grid, IEEE Transactions on Industrial Informatics, IEEE Transactions on Information Forensics & Security, IEEE Transactions on Transportation Electrification, IEEE Internet of Things Journal
- Member of IEEE Task Force on Cyber-Physical Interdependence for Power System Operation and Control
- Member of IEEE Task Force on BTM DERs: Estimation, Uncertainty Quantification & Control
- IEEE and PES member, member of IEEE Smart Grid Community, IEEE Industrial Electronics Society, IEEE Young Professionals, Institution of Engineering and Technology (IET)