Ioannis (Yannis) Zografopoulos

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RESEARCH INTERESTS

- 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 power system simulation with renewable and distributed resources

EDUCATION

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

Florida State University   **Tallahassee, Florida**
Ph.D candidate in Electrical & Computer Engineering, dep. ECE   *Jan 2019 - Aug 2021*

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*

EXPERIENCE

Imperial College   **London, UK**
Visiting Academic   *June 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.

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 the following European research programs:

- **SUNRISE:** Building the Internet of Underwater Things
- **SMS:** Sensing Toxicants in Marine waters makes Sense using bio-sensors
- **In2Rail:** Innovative Intelligent Rail fulfilling user demand
- **FIESTA–IoT:** Federated Inter-operable Semantic IoT Testbeds & Applications

University of Thessaly   **Volos, Greece**
Programmer   *Aug 2015 - Sep 2015*

Participated in the **NANOTRIM** research program, for the development of a continuous transistor sizing toolkit for nanoscale IC optimization.

AWARDS AND ACHIEVEMENTS

- 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
- IEEE VLSI Test Symposium participation and travel grant, Apr 2020
- Cyber Resilient Energy Delivery Consortium (CREDC) student award, Jun 2019
- First-Class Honors, **MSc Scholarship award**, Nov 2015
- First-Class Honors, ranked 7th in graduating class, Jul 2014

PUBLICATIONS

- **I. Zografopoulos**, C. Konstantinou, N. D. Hatziargyriou. "Distributed Energy Resources Cybersecurity Outlook: Vulnerabilities, Attacks, Impacts, and Mitigations." [under revision] In: IEEE Systems Journal, 2022.
- **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.

PUBLICATIONS UNDER PREPARATION

- Detection and Isolation of Malicious Attacks in Inverter-Based Microgrids
- Malware Attack Practises and Countermeasures: A Survey

MISCELLANEOUS

- Reviewer for IEEE Transactions on Power Systems, IEEE Transactions on Industrial Informatics, IEEE Internet of Things Journal, IEEE Access, IEEE Innovative Smart Grid Technologies, IEEE PES Power System Communications and Cybersecurity Technical Committee (PSCCC), IEEE Consumer Electronics Magazine, IEEE Computer Society Journal, IEEE Network magazine
- Subreviewer for ISVLSI, CPSIoTSEC, IEEE DSN
- 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 graduate student member
- Languages: Greek (native), English (TOEFL: 108/120, GRE:V/150, Q/160), German (Zertifikat Deutsch)