Ioannis (Yannis) Zografopoulos

linkedin.com/in/zografop/ | zografop@gmail.com | yianniszografopoulos
+966 (056) 594 2467 | Ioannis Zografopoulos | zografop.github.io

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

SCAN ME

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*
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*

RESEARCH & WORK 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** European research program, for the development of a continuous transistor sizing toolkit for nanoscale IC optimization.

TEACHING & MENTORING EXPERIENCE

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

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 the Advanced Electronics (CE335) course 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 with their individual project reports.

AWARDS AND ACHIEVEMENTS

- 1^{st} **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
- 1^{st} **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 7^{th} in graduating class, Jul 2014

PUBLICATIONS

- **I. Zografopoulos**, N. D. Hatziargyriou, C. Konstantinou. "Distributed Energy Resources Cybersecurity

Outlook: Vulnerabilities, Attacks, Impacts, and Mitigations." [to appear] 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

MEDIA COVERAGE

- "Simple hardware to defend microgrid attacks", Heno Hwang, **KAUST Discovery**, Dec 2022.
- "Blocking microgrid cyberattacks to keep the power flowing", **KAUST Discovery**, Feb 2022.

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, IEEE Smart Grid Community, IEEE Industrial Electronics Society, IEEE Young Professionals, Institution of Engineering and Technology (IET)
- Languages: Greek (native), English (TOEFL: 108/120, GRE:V/150, Q/160), German (Zertifikat Deutsch)