



# Mohammed Morsy Naeem Farag

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## *Summary*

I obtained a B.Sc. with a distinction with degree of honor in Electrical Engineering from Alexandria University in 2003. I was ranked second out of a class of more than 400 students and was offered a Teaching Assistant position in the ECE Department at Alexandria University, Faculty of Engineering. In 2007, I received a M.S. degree in Electrical Engineering from Alexandria University. My M.S. thesis introduces an optimized hardware implementation of the advanced encryption standard on field programmable gate arrays.

I earned my Ph.D. degree in Computer Engineering from Virginia Tech University in 2012. My Ph.D. addresses trust enhancement in cyber-physical systems containing untrusted components. This work was conducted as a part of an NSF-funded project and formed the cornerstone of a recent NSF award. Currently, I'm working as an assistant professor in the Electronics and Communications Department, at the Egypt-Japan University of Science and Technology (E-JUST).

My Ph.D. study granted me the chance to enrich my background on electrical engineering with valuable expertise in computer engineering which qualifies me to teach various topics and investigate interdisciplinary research areas in both branches.

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## *Education*

### **Ph.D. , Computer Engineering (GPA: 3.89)**

**Virginia Polytech Institute and State University (2009 – 2012)**

Dissertation: "Architectural Enhancements to Increase Trust in Cyber-Physical Systems Containing Untrusted Software and Hardware"

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### **M.S. , Electrical Engineering (GPA: 4.00)**

**Faculty of Engineering, Alexandria University (2003 – 2007)**

Thesis: "Hardware Implementations of The Advanced Encryption Standard on Field Programmable Gate Arrays"

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### **B.S. , Electrical Engineering (GPA: 4.00)**

**Faculty of Engineering, Alexandria University (1998 – 2003)**

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## ***Experience***

### **Assistant Professor (9 / 2013 – Present)**

Electronics and Communications Department, Egypt-Japan University of Science and Technology (E-JUST)

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### **Assistant Professor (10 / 2012 – Present)**

Electrical Engineering Department, Faculty of Engineering, Alexandria University

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### **Research Assistant (2009 – 2012)**

Virginia Polytech Institute and State University

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### **Research and Teaching Assistant (2003 – 2008)**

Electrical Engineering Department, Alexandria University

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## ***Professional Skills***

- Digital hardware design (VHDL, Verilog, Bluespec)
  - Embedded system design (Xilinx XPS, EDK)
  - System simulation (Matlab, Simulink, Mathcad)
  - General-purpose computing with graphical processing units
  - Formal verification (PSL, OVL, SystemVerilog)
  - Model checking (Cadence SMV)
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## ***Personal Skills***

- Presentation, communication, and technical writing skills
  - Dynamic, self-motivated, and hard worker
  - Ability to work under pressure
  - Ability to work individually and within groups
  - Leadership, advising, and managing skills
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## ***Research Interests***

- Cyber-physical security and run-time verification
- Hardware Trojan detection methods
- Design for security and trust
- Cognitive and software-defined radio
- Wireless communication systems
- Modulation and encoding techniques
- Heterogeneous, reconfigurable, and high performance computing
- Formal verification and model checking

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## *Teaching Experience*

- Basic and advanced digital integrated circuits
- Basic and advanced digital VLSI modeling and design
- Microprocessor system design
- Computer architecture & organization
- Embedded systems
- Automatic control engineering
- Antennas and wave propagation
- Analog and digital communications
- Semiconductor Devices

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## *Publications*

- Mohammed M. Farag, “**Architectural Enhancements to Increase Trust in Cyber-Physical Systems Containing Untrusted Software and Hardware**”. PhD dissertation, Virginia Polytechnic Institute and State University, 2012.
- Lee W. Lerner, Mohammed M. Farag, and Cameron D. Patterson, “**Run-time prediction and preemption of configuration attacks on embedded process controllers,**” presented at the Proceedings of the First International Conference on Security of Internet of Things, Kollam, India, 2012.
- Mohammed Farag, Lee Lerner, Cameron Patterson, “**Interacting with hardware Trojans over a network**”. In Hardware-Oriented Security and Trust (HOST), IEEE International Symposium on, pages 69–74, June 2012.
- Mohammed Farag, Lee Lerner, Cameron Patterson, “**Thwarting Software Attacks on Data-intensive Platforms with Configurable Hardware-assisted Application Rule Enforcement,**” In Field Programmable Logic and Applications (FPL), International Conference on, pages 207–212, September 2011.
- Mohamed Rizk, Mohammed Farag, “**Optimized Area and Optimized Speed Hardware Implementations of AES on FPGA**”. In Design and Test Workshop (IDT), 2007.