DR. IBRAHIM ETHEM BAGCI

Member of Technical Staff – Network Security Analyst
VMware
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EDUCATION

- **Lancaster University, Lancaster, United Kingdom** January 2016
  PhD at School of Computing and Communications ***Supervisor:*** Prof. Utz Roedig
  Research Topic: Novel Security Mechanisms for Wireless Sensor Networks
- **TOBB University of Economics and Technology, Ankara, Turkey** April 2011
  M.Sc. at Computer Engineering ***Supervisors:*** Prof. Kemal Bicakci, Prof. Bulent Tavli
  Dissertation Topic: The Impact of Non-repudiation on the Lifetime of Wireless Sensor Networks
- **TOBB University of Economics and Technology, Ankara, Turkey** August 2008
  B.Sc. at Computer Engineering ***Supervisor:*** Prof. Bulent Tavli
  Graduate Design Project Topic: Sensor Network Energy-Load Balancing Through Linear Programming
  - One semester at Catholic University of Avila, Avila, Spain (via Erasmus Student Mobility Program)

WORK EXPERIENCE

- **VMware** (London, United Kingdom) 07.2020 – present
  Member of Technical Staff – Network Security Analyst
- **Lastline, Inc.** (London, United Kingdom) 02.2019 – 06.2020
  Network Analyst
- **Quantum Base Ltd** (Lancaster, United Kingdom) 12.2017 – 02.2019
  Researcher
- **Lancaster University** (Lancaster, United Kingdom) 02.2016 – 02.2019
  Research Associate – School of Computing and Communications
- **Lancaster University** (Lancaster, United Kingdom) 10.2014 – 12.2014
  Teaching Assistant – School of Computing and Communications
- **TOBB University of Economics and Technology** (Ankara, Turkey) 2008 – 2011
  Teaching Assistant – Department of Computer Engineering

RESEARCH INTERESTS

Security and Privacy, Wireless Communications, Internet of Things, Programmable Networks

RESEARCH PROJECTS

- **Lightweight Authentication Methods Using Quantum Mechanics** *(EPSRC)* Joined on 12.2017 – 02.2019
  The aim of this project is to develop new efficient PUF and RNG devices using quantum mechanics.
- **RASE – Robustness-AS-Evolvability** *(EPSRC)* Joined on 04.2016 – 11.2017
  The RASE project aims to provide research on a dynamic and evolvable control plane based on software-defined-networks (SDN), which is resilient to targeted attacks.
- **Building a Wireless Testbed to Detect Physical Attacks on Wi-Fi Devices** *(EPSRC)* 01.2016 – 03.2016
- **RELYonIT - Research by Experimentation for Dependability on the IoT** *(EU)* Joined on 11.2013 – 01.2015
  The goal of this project is to enable dependable Internet of Things (IoT) applications by taking into account all relevant environmental properties and their impact on IoT platforms and protocols. (www.relyonit.eu)
- **Risk Management in Wireless Sensor Networks** *(Funded by HMGCC)* 01.08.2011 – 31.01.2016
  The goal of this project is to develop a risk management strategy for Wireless Sensor Networks comprising adaptive security mechanisms and threat monitoring methods.

RESEARCH VISITS

- Assoc. Prof. Ivan Martinovic, Computer Science Department, University of Oxford, Oxford, UK 11.2014

PUBLICATIONS

Journals

- T. McGrath, **I. E. Bagci**, Z. M. Wang, R. J. Young, U. Roedig, "A PUF taxonomy", *Applied Physics Reviews* (2019).
- **I. E. Bagci**, T. McGrath, ..., R. J. Young, U. Roedig, "Resonant-Tunnelling Diodes as PUF Building Blocks", *IEEE Transactions on Emerging Topics in Computing (TETC)* (2019).
- P. Cheng, **I. E. Bagci**, U. Roedig, J. Yan, "SonarSnoop: Active Acoustic Side-Channel Attacks", *International Journal of Information Security* (2018).
- R. Bernardo-Gavito, **I. E. Bagci**, ..., U. Roedig, R. J. Young, "Extracting Random Numbers from Quantum Tunnelling Through a Single Diode", *Scientific Reports* 7, 17879; doi: 10.1038/s41598-017-18161-9 (2017).
- J. Roberts, **I. E. Bagci**, ..., U. Roedig, R. J. Young, "Using Quantum Confinement to Uniquely Identify Devices", *Scientific Reports* 5, 16456; doi: 10.1038/srep16456 (2015).
- **I. E. Bagci**, S. Raza, U. Roedig, T. Voigt, "Fusion: Coalesced Confidential Storage and Communication Framework for the IoT", *Security and Communication Networks*, http://dx.doi.org/10.1002/sec.1260, 2015.
- K. Bicakci, **I. E. Bagci**, B. Tavli, and Z. Pala, "Neighbor sensor networks: Increasing lifetime and eliminating partitioning through cooperation", *Computer Standards & Interfaces*, vol. 35, no. 4, pp. 396-402, 2013.
- K. Bicakci, **I. E. Bagci**, and B. Tavli, "Communication / Computation Tradeoffs for Prolonging Network Lifetime in Wireless Sensor Networks: The Case of Digital Signatures", *Information Sciences*, vol. 188, pp. 44 – 63, 2012.
- K. Bicakci, **I. E. Bagci**, and B. Tavli, "Lifetime bounds of wireless sensor networks preserving perfect sink unobservability", *Communications Letters, IEEE*, vol. 15, no. 2, pp. 205 –207, 2011.
- K. Bicakci, H. Gultekin, B. Tavli, and **I. E. Bagci**, "Maximizing lifetime of event-unobservable wireless sensor networks", *Computer Standards & Interfaces*, vol. 33, no. 4, pp. 401 – 410, 2011.
- B. Tavli, **I. E. Bagci**, and O. Ceylan, "Optimal data compression and forwarding in wireless sensor networks", *Communications Letters, IEEE*, vol. 14, no. 5, pp. 408 –410, May 2010.
- B. Tavli, M. Kayaalp, O. Ceylan, and **I. E. Bagci**, "Data processing and communication strategies for lifetime optimization in wireless sensor networks", *AEU - International Journal of Electronics and Communications*, vol. 64, no. 10, pp. 992 – 998, 2010.

Conferences and Workshops

- P. Marcinkevicius, **I. E. Bagci**, N. M. Abdelazim, C. S. Woodhead, R. J. Young, U. Roedig, "Optically Interrogated Unique Object with Simulation Attack Prevention", in *Proceedings of Design, Automation & Test in Europe Conference & Exhibition (DATE)*, March 2019, Florence, Italy.
- P. Cheng, **I. E. Bagci**, J. Yan, U. Roedig, "Smart Speaker Privacy Control - Acoustic Tagging for Personal Voice Assistants", in *IEEE Workshop on the Internet of Safe Things (SafeThings) 2019, in conjunction with IEEE S&P'19*, October 2018, San Francisco, USA.
- P. Cheng, **I. E. Bagci**, J. Yan, U. Roedig, "Towards Reactive Acoustic Jamming for Personal Voice Assistants", in *the 2nd International Workshop on Multimedia Privacy and Security (MPS'18), in conjunction with CCS'18*, October 2018, Toronto, Canada.
- **I. E. Bagci**, U. Roedig, I. Martinovic, M. Schulz, M. Hollick, "Using Channel State Information for Tamper Detection in the Internet of Things", in *Proceedings of the 31st Annual Computer Security Applications Conference (ACSAC 2015)*, December 2015, Los Angeles, USA.
- **I. E. Bagci**, U. Roedig, M. Schulz, M. Hollick "Short Paper: Gathering Tamper Evidence in Wi-Fi Networks Based on Channel State Information", to appear *In Proceedings of the 7th ACM Conference on Security and Privacy in Wireless and Mobile Networks (WiSec 2014),* July 2014, Oxford, UK.
- **I. E. Bagci**, U. Roedig, "Node Identification Using Clock Skew", *In Proceedings of the 5th Workshop on Real-World Wireless Sensor Networks (RealWSN 2013),* September 2013, Como Lake, Italy.

- **I. E. Bagci**, S. Raza, T. Chung, U. Roedig, T. Voigt, "Combined Secure Storage and Communication for the Internet of Things", *In Proceedings of the 10th Annual IEEE Communications Society Conference on Sensing and Communication in Wireless Networks (SECON'13), IEEE.* June 2013, New Orleans, USA.
- J. Brown, **I. E. Bagci**, A. King, U. Roedig, "Defend Your Home! Jamming Unsolicited Messages in the Smart Home", *In Proceedings of the 2nd ACM Workshop on Hot Topics on Wireless Network Security and Privacy (HotWiSec'13), in conjunction with WiSec'13*. April 2013, Budapest, Hungary.
- **I. E. Bagci**, M. R. Pourmirza, S. Raza, U. Roedig, T. Voigt, "Codo: Confidential Data Storage for Wireless Sensor Networks", *In the 8th IEEE International Workshop on Wireless and Sensor Networks Security (WSNS'12), in conjunction with IEEE MASS'12, IEEE.* October 2012, Las Vegas, Nevada, USA.
- M. Kayaalp, O. Ceylan, **I. E. Bagci**, B. Tavli, "Data processing and communication strategies for lifetime optimization in wireless sensor networks" *In IEEE Signal Processing and Communications Applications Conf. (SIU'09)*. April 2009.

arXiv

- B. Astbury, **I. E. Bagci**, ..., R. Bernardo-Gavito, R. J. Young, "Strong PUFs from arrays of resonant tunnelling diodes", *arXiv:1805.03246* (2018).

Posters and Demos

- T. McGrath, R. Bernardo-Gavito, **I. E. Bagci**, C. Wang, B. Astbury, R. J. Young, U. Roedig, "Poster: Quantum Confinement as Security Elements", *CHES 2018*, September 9–12, 2018, Amsterdam, The Netherlands.
- J. Brown, **I. E. Bagci**, A. King, U. Roedig, "Demo: Home Jamming", *In Proceedings of 10th European Conference on Wireless Sensor Networks (EWSN'13)*. February 2013, Gent, Belgium.

TALKS

- "Using Channel State Information for Tamper Detection in the Internet of Things" – ACSAC 2015, December 2015, Los Angeles, USA.
- "Gathering Tamper Evidence in Wi-Fi Networks Based on Channel State Information" – ACM WiSec 2014, July 2014, Oxford, UK.
- "Defend Your Home! Jamming Unsolicited Messages in the Smart Home" – Cyber Security Conference 2013 (CSC 2013), December 2013, Lancaster, UK.
- "Node Identification Using Clock Skew" – The 2nd Academic Centres of Excellence in Cyber Security Research Conference **[I represented Security Lancaster in the elevator pitch]**, December 2013, Solihull, UK.
- "Node Identification Using Clock Skew" – REALWSN 2013, September 2013, Como Lake, Italy.
- "Combined Secure Storage and Communication for the Internet of Things" – IEEE SECON 2013, June 2013, New Orleans, USA.
- "Defend Your Home! Jamming Unsolicited Messages in the Smart Home" – ACM HotWiSec 2013 [in conjunction with ACM WiSec 2013], April 2013, Budapest, Hungary.
- "Codo: Confidential Data Storage for Wireless Sensor Networks" – IEEE WSNS 2012 [in conjunction with IEEE MASS 2012], October 2012, Las Vegas, USA.

PUBLICATION REVIEWS

IEEE Internet of Things Journal (2018, 2017), ACM Transactions on Sensor Networks (2017), EURASIP Journal on Information Security (2014), Computer Standards & Interfaces (2014, 2013), IEEE Communications Letters (2011).

SCHOLARSHIPS

- Industrial PhD Studentship by HMGCC 2011 - 2016
- TOBB University of Economics and Technology, Graduate Student Scholarship 2008 - 2011
- TOBB University of Economics and Technology, Undergraduate Student Scholarship 2004 - 2008