

## **Bassam Jamil Mohd, Ph.D.**

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### **SUMMARY OF QUALIFICATIONS**

- Academic experience at the Hashemite University
- Doctor of Philosophy degree in Electrical and Computer Engineering.
- Seventeen years of semiconductor industry experience.
- Seven years as consultant to assist, train and mentor customers with software products. Experience in presentation preparation and delivery. Good communication skills.
- Experienced with programming in C, Verilog, Quartus, Perl and Vera.
- Strong desire to research industry related challenges.

### **RESEARCH INTERESTS**

- Hardware Security
- VLSI Design
- DSP Design
- FPGA and VLSI designs for lightweight ciphers,
- Image Processing with emphasis on Steganography
- Automatic Speech Recognition
- Low Power VLSI Design
- High-Performance VLSI Circuits

### **EDUCATION**

- **Ph.D.** in Electrical and Computer Engineering, University of Texas at Austin, TX, Graduate Date: December, 2008  
GPA:3.9/4.0  
Dissertation Title: "Switch-Based Fast Fourier Transform Processor"  
Advisor: Earl E. Swartzlander, Jr.
- **M.S.** in Computer Engineering, University of Louisiana, Lafayette, LA, 1992, GPA:4.0/4.0
- **B.S.** in Computer Engineering, KFUPM, Dhahran, SA, 1990, GPA:3.9/4.0, Awarded first honors.

### **EXPERIENCE**

**Faculty member in Computer Engineering Department, Faculty of Engineering, Hashemite University, Zarqa, Jordan. Positions held:**

- **Associate Professor: January, 2015 - present**
- **Computer Engineering Department Chairman: September, 2016 – September, 2018**
- **Assistant Professor: September, 2009 - January, 2015**

**Active faculty member with tasks include:**

- Managed and organized ABET accreditation activities for Computer Engineering Department during my chairmanship. The department was accredited on July, 2018.
- Significantly contributed to research as shown in my google scholar account.
- Contributed to technical article reviews as shown in my publons.com account.
- Successfully taught the following courses: cryptography systems, VLSI, Digital System Design, embedded systems, Computer Organization digital logic, systems programming, digital integrated circuits and discrete math.
- Oversaw various laboratory courses.
- Supervised senior design projects, which participated in various competitions.
- Participated in various committees and task forces.

**Staff Engineer, Qualcomm, Austin, TX (July, 2005 – August, 2009)**

Participated in the design of the Hexagon Digital Signal Processor. Tasks included:

- Develop object-oriented programs (in Vera language) to construct test-benches for verification.
- Developed power estimation flow to accurately measure RTL design power. Developed software flow using Perl and Tcl-tk languages.
- Performed power analysis to estimate power and identify power optimizations.

**Staff Consultant, Synopsys, Austin, TX (August, 1998 – July, 2005)**

As part of the professional consulting services, the mission was to assist our customers to adopt Synopsys software tools. Tasks include:

- On-site training for our customer to adopt Vera, an object oriented programming language to build testbenches and write tests.
- Participated in customer projects in writing Vera programs and tests.

**Design Engineer, Tundra Semiconductor, Ottawa, ON (July, 1997 – July, 1998)**

Designed and verified DMA controller. Participated in place and route physical design tasks.

**Design Engineer, Sun Microsystems, Sunnyvale, CA (September, 1995 – June, 1997)**

As member of Ultra-Sparc-III team, designed the floating point divider array and performed a detailed study on the circuit noise.

**Design Engineer, MasPar Corporation, Sunnyvale, CA (February, 1995 – September, 1995)**

Performed timing analysis on the processing element of the MasPar computer.

**Design Engineer, Intel, Hillsboro, OR (September, 1992 – February, 1995)**

As a member of the PentiumPro team, designed circuits in execution unit, including shifter, adder and clocks.

**SOFTWARE**

Programming: C++, C, Vera, Perl, CSH

Signal Processing Programming: Matlab

Microsoft Office Products

Hardware Design Software: Hspice, Vera, VCS, ModelSim, Quartz

Power/Timing Analysis: PrimeTime, PowerTheater

**PUBLICATIONS****Journals**

- Hayajneh, Thayer, Kristen Griggs, Muhammad Imran, and **Bassam J. Mohd**. "Secure and efficient data delivery for fog-assisted wireless body area networks." *Peer-to-Peer Networking and Applications* (2019): 1-19.
- Abed, Sa'ed; Jaffal, Reem; **Mohd, Bassam J.**; Alshayegi, Mohammad. 2019. "FPGA Modeling and Optimization of a SIMON Lightweight Block Cipher." *Sensors* 19, no. 4: 913, 2019.
- A. Almajali, K. M. Yousef, **Bassam J Mohd**, W. Dweik, S. AbuGhalyon, R. Hasan, "Semi-Quantitative Security Risk Assessment of Robotic Systems", *Jordanian Journal of Computers and Information Technology (JJCIT)*, Vol. 04, No. 03, December 2018.
- Lonsetta A, Cope P, Campbell J, **Mohd B J**, Hayajneh T. Security Vulnerabilities in Bluetooth Technology as Used in IoT. *Journal of Sensor and Actuator Networks*. 2018 Jul 19;7(3):28.
- Ahmad Yousef KM, AlMajali A, Ghalyon SA, Dweik W, **Mohd B J**. Analyzing Cyber-Physical Threats on Robotic Platforms. *Sensors*. 2018 May 21;18(5):1643.
- **Mohd BJ**, Hayajneh T. Lightweight Block Ciphers for IoT: Energy Optimization and Survivability Techniques. *IEEE Access*. 2018;6:35966-78.
- Hayajneh T, Ullah S, **Mohd BJ**, Balagani KS. An Enhanced WLAN Security System with FPGA Implementation for Multimedia Applications. *IEEE Systems Journal*. 2017 Dec;11(4):2536-45.
- Yousef, Khalil M. Ahmad, **Bassam J. Mohd**, Khalid Al-Widyan, and Thayer Hayajneh. "Extrinsic Calibration of Camera and 2D Laser Sensors without Overlap." *Sensors* 17, no. 10 (2017): 2346.
- **Mohd, Bassam Jamil**, et al. "Hardware design and modeling of lightweight block ciphers for secure communications." *Future Generation Computer Systems*, 83 (2018): 510-521  
<http://doi.org/10.1016/j.future.2017.03.025>.
- Hayajneh T, **Mohd BJ**, Imran M, Almashaqbeh G, Vasilakos AV. Secure Authentication for Remote Patient Monitoring with Wireless Medical Sensor Networks. *Sensors*. 2016 Mar 24;16(4):424.
- **Mohd BJ**, Hayajneh T, Khalaf ZA, Vasilakos AV. A comparative study of steganography designs based on multiple FPGA platforms. *International Journal of Electronic Security and Digital Forensics*. 2016;8(2):164-90.
- **Mohd BJ**, Hayajneh T, Khalaf ZA, Yousef A, Mustafa K. Modeling and optimization of the lightweight HIGHT block cipher design with FPGA implementation. *Security and Communication Networks*. 9, no. 13 (2016): 2200-2216.
- **Mohd BJ**, Hayajneh T, Vasilakos AV. A survey on lightweight block ciphers for low-resource devices: Comparative study and open issues. *Journal of Network and Computer Applications*. 2015 Dec 31;58:73-93.

- Almashaqbeh, Ghada, Thayer Hayajneh, Athanasios V. Vasilakos, and **Bassam J. Mohd**. "QoS-aware health monitoring system using cloud-based WBANs." *Journal of medical systems* 38, no. 10 (2014): 121.
- **Bassam J Mohd**, T. Hayajneh, S Abed, A. Itradat, "Analysis and Modeling of FPGA Implementations of Spatial Steganography Methods," *Journal of Circuits, Systems and Computers*, World Scientific, 2014 Feb 12;23(02):1450018.
- **Bassam J Mohd**, T. Hayajneh, AN Quttoum, "Wavelet-Transform Steganography: Algorithm and Hardware Implementation," *International Journal of Electronic Security and Digital Forensics*, Inderscience, , Vol. 5, Nos. 3/4, 20132013.
- **Bassam Jamil Mohd**, Sa'ed Abeda , Sahel Alouneh "Carry-based reduction parallel counter design", *International Journal of Electronics*, Volume 100, Issue 11, 2013.
- T. Hayajneh, R. Doomun, G. Al-Mashaqbeh, **Bassam J Mohd** "An energy-efficient and security aware route selection protocol for wireless sensor networks," *Security and Communication Networks*, John Wiley, 2013. DOI: 10.1002/sec.915.
- Sahel Alouneh, Sa'ed Abed, Mazen Kharbutli, **Bassam J. Mohd**, "MPLS Technology in Wireless Networks", *Wireless Networks*, Springer US, DOI: 10.1007/s11276-013-0660-3, 2013, (IF: 0.736)
- **Bassam Jamil Mohd**, Sa'ed Abed, Bassam Na'ami and Thayer Hayajneh, "Hierarchical steganography using novel optimum quantization technique" *Signal, Image and Video Processing*, Online First™, 14 March 2012.
- Sa'ed Abed, Ashraf Hasan Bqerat, Sahel Alouneh and **Bassam Jamil Mohd**, "A Novel Approach to Enhance Distributed Virtual Memory", *Computers and Electrical Engineering*, Vol. 38, issue 2, pp. 388-398, Elsevier, DOI: 10.1016/j.compeleceng.2011.11.006, March 2012, (IF: 0.526).
- Sa'ed Abed, **Bassam Jamil Mohd**, Ziad Al-Bayatti and Sahel Alouneh, "Low Power Wallace Multiplier Design based on Wide Counters", To appear in *International Journal of Circuit Theory and Applications*, John Wiley & Sons (IF: 1.759).

## Conferences

- **Mohd, Bassam J.**, Ibtehal Amro, and Anas Alhasani. "Indoor Wi-Fi tracking system using fingerprinting and Kalman filter." In *Applied Electrical Engineering and Computing Technologies (AEECT)*, 2017 IEEE Jordan Conference on, pp. 1-6. IEEE, 2017.
- Yousef, Khalil M. Ahmad, Anas AlMajali, Waleed Dweik, and **Bassam Mohd**. "Security risk assessment of the PeopleBot mobile robot research platform." In *Electrical and Computing Technologies and Applications (ICECTA)*, 2017 International Conference on, pp. 1-5. IEEE, 2017.
- **Mohd, B. J.** ; Hayajneh, T. ; Khalaf, Z. "Optimization and modeling of FPGA implementation of the Katan Cipher," *6th International Conference on Information and Communication Systems (ICICS)*, 2015. pp. 68-72, DOI:10.1109/IACS.2015.7103204.
- **B. J. Mohd**, T. Hayajneh, M. Z. Shakir, K. A. Qaraqe, and A. Vasilakos "Energy model for light-weight block ciphers for WBAN applications," in *Proc. Intl. Conf. Wireless Mobile Communications and Healthcare, MobiHealth'2014*, Athens, Greece, Nov. 2014.
- **Mohd, B.J.**; Abed, S.; Al-Hayajneh, T.; Alouneh, S., "FPGA hardware of the LSB steganography method," *Computer, Information and Telecommunication Systems (CITS)*, 2012 International Conference on , vol., no., pp.1,4, 14-16 May 2012, doi: 10.1109/CITS.2012.6220393.
- T. Hayajneh, S. Khasawneh, **Bassam J. Mohd**, A. Itradat, "Analyzing the Impact of Security Protocols on Wireless LAN with Multimedia Applications," In *Proc. of The Sixth International Conference on Emerging Security Information, Systems and Technologies (SECURWARE 2012)*, pp. 169-175, Rome, Italy, August, 2012.
- **Mohd, B.**, Abed, S., Al-Naami, B., Alouneh, S.: Image steganography optimization technique. In: *International Joint Conference on Advances in Signal Processing and Information Technology*, 2011, Amsterdam
- Sahel Alouneh, Sa'ed Abed, Ashraf Hasan Bqerat and **Bassam Jamil Mohd**, "A Methodology for Distributed Virtual Memory Improvement", In *Proc. of the Informatics Engineering and Information Science (ICIEIS 2011)*, Kuala Lumpur, Malaysia, Nov. 14-26, 2011, Part III, *Communications in Computer and Information Science (CCIS)*, Springer-Verlag Berlin Heidelberg, Vol. 253, pp. 378–384, 2011.
- **B. Mohd**, E. E. Swartzlander, Jr., "A Power-Scalable Switch-Based Multi-Processor FFT," *20th IEEE International Conference on Application-specific Systems, Architecture and Processors*, Boston, July 7-9, 2009.
- S. Bijansky, **B. Mohd** and B. Mohammad "Using ESP-CV for Dynamic Power Analysis of Custom Macros to Reduce Analysis Time and Improve Accuracy", *IEEE International Conference on IC Design & Technology*, Austin, TX, May 18-20, 2009
- **B. Mohd**, M. Saint-Laurent, P. Bassett, S. Imam "Reducing Flip-Flop Power for DSP Design," *Third Annual Austin Conference on Integrated Systems and Circuits*, pp. 34-39, Austin, TX, May 2008
- **B. Mohd**, A. Aziz and E. E. Swartzlander, Jr. "The hazard-free superscalar pipeline fast Fourier transform algorithm and architecture," *15th annual IFIP VLSI SoC 2007*, pp. 194-199, Atlanta, October 2007.

- H. Saleh, **B. Mohd**, A. Aziz and E. E. Swartzlander, Jr. "Contention-free switch-based implementation of 1024-point Fourier transform engine," *25th IEEE International Conference on Computer Design*, pp. 7-12, Lake Tahoe, CA, October 2007.
- A. Wakefield, **B.J. Mohd**, "Constructing reusable testbenches," *hldvt*, pp.151-155, *Seventh IEEE International High-Level Design Validation and Test Workshop (HLDVT'02)*, pp:151-154, 2002
- M. Hibarger, B. Chin, J. Chen. **B. Mohd**, "Packet-Data-Path Functional Verification Testbench: Stimulus Generation and User Interface." *Synopsys User Group Conference*, Boston, 2002
- T. Madraswala, **B. Mohd**, M. Ali, R. Premi, M. Bayoumi, "A reconfigurable ANN Architecture", *IEEE International Symposium on Circuits and Systems*, vol-3, pp:1569-1572, San Diego, May 1992.
- Hayajneh T, Zhang T, **Mohd BJ**. Security Issues in WSNs with Cooperative Communication. In *Cyber Security and Cloud Computing (CSCloud)*, 2015 IEEE 2nd International Conference on 2015 Nov 3 (pp. 451-456). IEEE.

#### Book

- Contributed a chapter in the book titled "VLSI-SOC: Advanced Topics on Systems on a Chip", Edited by R. Reis, V. Mooney and P. Hasler, Springer, March, 2009, pp:227-248.

#### **PATENTS**

- Holds the following inventions registered with the United States Patent and Trademark Office. The patents' titles and numbers:
  - Clock gating system and method (7902878),
  - Method and apparatus for handling multiplexer contention during scan (5,715,256),
  - Methods for wiring electrical systems and electrical systems wired to reduce noise (5,841,206),
  - Fast carry-sum form booth encoder (5,944,776),
  - Noise suppression method and circuits for sensitive circuits (5,933,021)
  - Zero setup time flip flop (5,867,049).

#### **Review Committees**

- Master thesis committees:
  - FPGA Modeling and Optimization of SIMON Block Cipher Design by Reem Wajdi Jaffal, Kuwait University, July, 2018.
  - Design of an Analog IC Filter for Mixed-Mode Applications, Abdullah Abbas Sheikh Deeb, Princess Sumaya University for Technology, May 2018.
  - AN INTELLIGENT TRAFFIC LIGHT SCHEDULING TECHNIQUE USING CALENDAR-BASED HISTORY INFORMATION, Mohammad Latayfeh, Jordan University of Science and Technology, September, 2017.
  - Design of a Switched-Mode Operational Amplifier for Analog Signal Low Voltage Applications, Jannah Rabea Al-Hashimi, Princess Sumaya University for Technology, May 2017.
  - A D-Type Flip-Flop with Enhanced Timing Using CMOS Technology and Low Supply Voltage, Osama Naser Bondog, Princess Sumaya University for Technology, May 2017.
  - High performance sample and hold circuit used in mixed signal applications, Abdualah Khalil Hassan, Princess Sumaya University for Technology, July, 2016.
  - BRAILLE CHARACTER RECOGNITION, Aisha Musa Al faitouri, Jordan University, July, 22, 2013.
  - A clustering approach for reconstructing cross-cut shredded images, Jordan University, April, 22, 2013.
- Reviewed technical and academic papers for international journals, see my account @ [publons.com/a/655838/](https://publons.com/a/655838/).

#### **Awards**

- Best paper award in 2019 IEEE Jordan International Joint Conference on Electrical Engineering and Information Technology (JEEIT).
- "Cloud- Based WBAN" graduation project won 3rd place, bio-medical technology category, in the 9th national technology parade, held in Amman Ahliyah University, Jordan, 2016.

#### **REFERENCES**

Will be furnished upon request.