

Dr. Muhammad Jawad Ikram

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PERSONAL PROFILE

I received the B.E. degree in Computer Systems Engineering from the University of Engineering and Technology, Peshawar, Pakistan, in December 2010, the M.Sc. degree with Distinction in Networks and Performance Engineering from the University of Bradford, U.K., in December 2012, and the Ph.D. degree from the Department of Computer Science, King Abdulaziz University (KAU), Jeddah, Saudi Arabia, in March 2018. I have been a Member of the High-performance Computing (HPC) Research Group at the Department of Computer Science, Faculty of Computing and Information Technology (FCIT) since February 2014. After graduation from KAU, I joined the Department of Computer Science and Software Engineering, International Islamic University (IIU), Islamabad, Pakistan, as an Assistant Professor under the Interim Placement of Fresh PhDs (IPFP) program of HEC, Pakistan in August 2018. After completing the one-year contract with IIU, I joined the Faculty of Computing at Riphah International University, Malakand Campus as Assistant Professor and Head of Department, in August 2019. In November 2019, I was appointed as Assistant Professor on Tenure Track System at the University Institute of Information Technology, PMAS Arid Agriculture University, Rawalpindi. On February 10, 2020, I resigned from the said post and moved to Saudi Arabia from Pakistan with my wife, as she got Scholarship for Ph.D. in Biology from KAU, Jeddah, Saudi Arabia. Then, I re-joined KAU as a Member of the HPC Research Group, Department of Computer Science, FCIT, KAU in February 2020. From September 6, 2020 to August 31, 2023, I worked as an Assistant Professor at Jeddah International College, Saudi Arabia. Since September 3, 2023, I have been working as an Assistant Professor at The Arab Open University, Saudi Arabia. My recent research interests include Energy-Aware Algorithms, Exascale Computing, HPC, GPU Computing, Game Theory, Internet of Things, and Performance Modeling.

TEACHING EXPERIENCE

Sep 03, 2023 – present	The Arab Open University, Saudi Arabia – Assistant Professor at Faculty of Computer Science.
Sep 06, 2020 – Aug 31, 2023	Jeddah International College, Jeddah, Saudi Arabia – Assistant Professor at Department of Computer Science.
Nov 19, 2019 – Feb 10, 2020	PMAS Arid Agriculture University, Rawalpindi – Assistant Professor at University Institute of Information Technology.
Aug 26, 2019 – Oct 2, 2019	Riphah International University, Malakand Campus – Assistant Professor and Head of Department (Faculty of Computing).

Aug 15, 2018 - Aug 15, 2019

International Islamic University, Islamabad – **Assistant Professor at Department of Computer Science and Software Engineering.**

Fall 2013-14

International Islamic University, Islamabad – **Visiting Lecturer**

Fall 2013-14

Abdul Wali Khan University, Mardan – **Visiting Lecturer**

COURSES TAUGHT

1. Programming 1 (Java)
2. Programming 2 (Java)
3. Data Structures (Java)
4. Structured Computer Programming (Matlab)
5. Human-Computer Interaction
6. Human-Computer Factors in System Design
7. Software Engineering
8. Software Requirements Engineering
9. Usability Engineering
10. Artificial Intelligence
11. Computer Organization and Assembly Language
12. Computer Organization and Architecture
13. Introduction to Programming (Java)
14. Web, Mobile, and Cloud Technologies
15. Object-Oriented Analysis and Design
16. Introduction to Computers
17. Basics of Academic Writing
18. Basic Mathematics
19. Communication and Presentation Skills

SUPERVISION OF BS FINAL YEAR PROJECTS: 8 Projects

SUPERVISION OF MS THESIS: 1 Thesis

RESEARCH EXPERIENCE

Feb 2014 – Present

King Abdulaziz University, Jeddah – **Member (Visiting) of the HPC Research Group, Department of Computer Science, FCIT.**

RESEARCH WORK

Research Projects

1. Worked as a team member in the project entitled, *Toward Power Efficient High Performance Computing* (A project supported by the Deanship of Scientific Research, King Abdulaziz University, under Grant 1-611-1433/HiCi).
2. Worked as Principal Investigator (PI) in the project entitled, *Power and Energy Efficient*

Algorithms, and Programming Techniques for Exascale Systems (A project supported by the Higher Education Commission of Pakistan, under project number 2319).

Dissertations

1. Ph.D Dissertation: "Energy-Efficient GPU-Based High-Performance Computing," March 2018.
2. MS Dissertation: "Performance versus Security Tradeoff in Robotic Mobile Wireless Ad hoc Networks (RANETs)," September 2012.

Journal Papers

1. **M. J. Ikram**, M. E. Saleh, M. A. Al-Hashimi, and O. A. Abulnaja, "Investigating the Effect of Block Size on Power and Energy Consumption of GPU Kernels," *The Journal of Supercomputing*, vol. 10, pp. 1-21, 2022. **(ISI web of science Impact Factor: 2.6)**
2. S. S. Hassan, Z. Iqbal, **M. J. Ikram**, and M. Ishaque, "Henon Chaotic Map based Image Encryption Scheme using Bit-Level Circular Shift," *Journal of Theoretical and Applied Information Technology*, 2022. **(ISI web of science)**
3. O. A. Abulnaja, **M. J. Ikram**, M. A. Al-Hashimi, and M. E. Saleh, "Analyzing Power and Energy Efficiency of Bitonic Mergesort based on Performance Evaluation," *IEEE Access*, vol. 6, pp. 42757-42774, 2018. **(ISI web of science Impact Factor: 4.098)**
4. **M. J. Ikram**, O. A. Abulnaja M. E. Saleh and M. A. Al-Hashimi, "Measuring Power and Energy Consumption of Programs Running on Kepler GPUs," accepted for publication in *Journal of Electrical Systems and Information Technology*, 2018. **(accepted for publication)**
5. M. A. Al-Hashimi, O. A. Abulnaja, M. E. Saleh and **M. J. Ikram**, "Evaluating Power and Energy Efficiency of Bitonic Mergesort on Graphics Processing Unit," *IEEE Access*, vol. 5, pp. 16429-16440, 2017. **(ISI web of science Impact Factor: 4.098)**
6. **M. J. Ikram** and J. Cazalas, "Efficient Collaborative Technique using Intrusion Detection System for Preserving Privacy in Location-based Services," *International Journal of Computer Networks and Applications*, vol. 2, no. 5, 2015.
7. **M. J. Ikram** and K. Ahmad, "Investigation of Performance-Security Tradeoff in Robotic Mobile Wireless Ad hoc Networks (RANETs) using Stochastic Petri Nets," *International Journal of Computer Applications*, vol. 62, no. 18, pp. 34-41, 2013.
8. K. Ahmad, N. Ahmad, K. Haider and **M. J. Ikram**, "Effect of Salient Features in Object Recognition," *International Journal of Computer Applications*, vol. 62, no. 18, pp. 34-41, 2013.

Conference Papers

1. A. Riaz, **M. J. Ikram**, and N. Asadullah. "Using Blockchain to overcome the issues in Land Registry Management: A Systematic Literature Review," In *IEEE 1st International Conference on Advanced Innovations in Smart Cities*, January 2023.
2. J. M. Qurashi, **M. J. Ikram**, K. Jambi, F. E. Eassa and M. Khemakhem. "Autonomous Vehicles: Challenges and Game-theory-based Countermeasures," In *IEEE 1st International Conference on Advanced Innovations in Smart Cities*, January 2023.
3. M. T. Zamir, M. A. Ayub, J. Khan, **M. J. Ikram**, N. Ahmad and K. Ahmad. "Document Provenance and Authentication through Authorship Classification," In *IEEE 1st International Conference on Advanced Innovations in Smart Cities*, January 2023.
4. T. Himdi, M. Ishaque, **M. J. Ikram**. "Cyber Security Challenges in Distributed Energy Resources for Smart Cities," In *9th IEEE International Conference on Computing for Sustainable Global Development (INDIACom)*, pp. 788-792, March 2022.

5. **M. J. Ikram**, O. A. Abulnaja M. E. Saleh and M. A. Al-Hashimi, "Measuring Power and Energy Consumption of Programs Running on Kepler GPUs," in *IEEE 5th International Conference on Advanced Control Circuits and Systems, and IEEE 4th International Conference on New Paradigms in Electronics & Information Technology, Alexandria, Egypt*, November 2017.
6. **M. J. Ikram**, "Performance and Security Modeling of Mobile Wireless Ad hoc Networks using Petri Nets," in *6th Scientific Forum for KAU Students*, December 2015.
7. K. M. Jambi, A. A. Hadi, **M. J. Ikram**, O. A. Abdulkader, "A Novel Chaos-based Image Encryption Using Circular Shift," in *6th Scientific Forum for KAU Students*, December 2015.

AWARDS AND DISTINCTIONS

1. Fully Funded Scholarship for Ph.D. Studies from Ministry of Higher Education, Saudi Arabia (2014-2018).
2. Donation of Equipment (NVIDIA Tesla K40c GPU) from NVIDIA Corporation for Research (2016).
3. Associate Editor/Reviewer with *IEEE Access* since February 2018.
4. Master Degree with Distinction from the University of Bradford, United Kingdom (2012).
5. Member of High-Performance Computing Research Group, KAU, Jeddah, Saudi Arabia (2014-present).
6. Member of Pakistan Engineering Council (2010-present).
7. Member of the Graduate Research Committee, Department of Computer Science and Software Engineering, International Islamic University, Islamabad (Spring 2019).
8. Chairman of Learning Resources and e-Learning Unit, Jeddah International College, Saudi Arabia (2021-2023).

EDUCATION AND QUALIFICATION

2014 – 2018 **King Abdulaziz University Jeddah, Kingdom of Saudi Arabia**

Ph.D. Computer Science (Specialization in GPU Computing and High-Performance Computing)

2011 – 2012 **University of Bradford, United Kingdom.**

**MSc Networks and Performance Engineering with Distinction
(First Position Holder)**

Principal Modules Included: Networks and Protocols, Networks Performance Modeling and Analysis, Advanced Simulation Modeling, Reliability Modeling and Analysis, Software Development.

2006 – 2010 **University of Engineering and Technology Peshawar, Pakistan**

BSc Computer Systems Engineering

Principal Modules Included: Object-Oriented Programming, Data Communication and Networks, Digital Signal Processing, Digital image Processing, Digital System Design, Microprocessor Based System Design, Control Systems, Circuit and Systems, Database Management System, Electricity & Magnetism, Engineering Mechanics.

2004 – 2006 **Islamia College Peshawar, Pakistan**

HSSC (Higher Secondary School Certificate Examination), equivalent A-Levels

2002 – 2004 **The Mardan Model School and College Mardan, Pakistan**

SSC (Secondary School Certificate Examination), equivalent O-Levels

OTHER QUALIFICATION

2011 IELTS Band: **6.5**

2010 CCNA Training Course , CORVIT Systems Rawalpindi.

2010 Voice Over IP (VoIP) Training Course, CORVIT Systems Rawalpindi.

PRACTICAL SKILLS

- CUDA for programming on NVIDIA's modern GPU architectures (Pascal P100, Tesla K40, Tesla K20).
- NVIDIA System Management Interface, NVIDIA Visual and Command line Profilers, and NVIDIA Nsight Visual Studio Edition for power management and performance analysis on NVIDIA GPUs.
- Minitab, Origin, and other statistical analysis tools.
- Visual C, Turbo C Compilers, Netbeans IDE and Emacs Environment for programming in Java, C#, C and C++.
- MATLAB and Simulink.
- Modelsim and Xilinx ISE for simulations, synthesis, design and Implementation of Digital Systems using Verilog with Spartan 3 FPGA.
- Proteus for simulations of the 8051 Microcontroller and Electronics Work bench for Circuits Simulations.
- OPNET, Wireshark, and other Network simulations and analysis tools.
- Latex, Microsoft Office tools, Windows, Linux.

MAJOR COURSEWORK IN MS NETWORKS & PERFORMANCE ENGINEERING

Module: Networks Performance Modeling and Analysis

- Performance Modelling and Evaluation of a Wireless Cellular Network of Voice Calls.

Module: Advanced Simulation Modeling & Analysis

- Simulations of Normal, Hyper-Exponential, K-Erlang and Generalized Exponential Random Variables.
- Simulations of Geometric, Binomial and Poisson Random Variables.
- Simulations of Slotted Aloha & Pure-Aloha Protocols.
- Simulations of M/M/1, GE/GE/1 and M/M/c/N and GE/GE/c/N queue.
- Simulating Open Queuing Network.

Module: Reliability Modeling & Analysis

- The Decomposition Method for Calculating Reliability of a System with a given Reliability

Block Diagram

- Inclusion-Exclusion Principle to Work out the Failure Probability of 3-of-4-G System
- Uniform Distribution and Central Limit Theorem

MAJOR PROJECTS IN BS COMPUTER SYSTEMS ENGINEERING

Final Year Project

- Turbo Codes, Simulations in MATLAB and Implementation on FPGA.

Semester Projects

- Implementation and Analysis of Low Pass Filter using Z-Transform in MATLAB.
- Implementation of Cyclic Redundancy Check (CRC) in MATLAB.
- Implementation of Digital Alarm Clock on Spartan 3 FPGA using Xilinx ISE 9.1.
- Implementation of Burglar Alarm with Infrared Sensor on 8051 Microcontroller.
- Development of Database for Asia Arms Dealer using SQL in Microsoft Access.
- Implementation and Analysis of Low Pass Butterworth Filter in MATLAB and Visual DSP++.
- Presentation on Ethical Hacking.

RESEARCH INTERESTS

Energy-Aware Algorithms, Exascale Computing, HPC, GPU Computing, Game Theory, Internet of Things, Smart Cities and Performance Modeling.

LANGUAGES

English (Competent), Urdu (Expert), Pashto (Native Language), and Arabic (moderate skills).

COUNTRIES VISITED

Jordan: for Tourism in 2022.

Kingdom of Saudi Arabia: for Omra in 2007 and 2014, for Ph.D. studies 2014-2018, and for new job in 2020.

Kyrgyzstan: for Tourism in 2021.

Egypt: for IEEE Conference in Alexandria in November 2017.

UAE: for Tourism in 2012, 2014 and 2016.

UK: England, Scotland and Wales (for post-graduate study in 2011-12).

India: for Tourism in 2005.

REFERENCES

1. Prof. Dr. Osama Ahmad Abulnaja
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2. Dr. Mostafa Elasyed Saleh
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