

Arsalan Shahid



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PROFESSIONAL SUMMARY

Arsalan Shahid is a doctoral research scholar in Heterogeneous Computing Lab (HCL) at University College Dublin, Ireland. He is currently working on energy-aware massively parallel heterogeneous processing architectures. Arsalan graduated as gold medalist for best final year project in BS Electrical Engineering from HITEC University Pakistan, in 2016. As a research associate, he worked on embedded benchmarking at EMWITECH, Pakistan. He also holds a research experience of more than 2 years as a research assistant in a funded research project on multicore reconfigurable processors by Ministry of IT, Pakistan.

During his stay at HITEC, Arsalan founded TechHub to transform educational flow, in 2015. In early 2018, he co-founded KATech, which is a startup business in Dublin registered with the republic of Ireland to revolutionize software technology in e-commerce and education sectors. He is currently the *Chief Operating Officer* at KATech.

Arsalan is a member of *European Network for Sustainable Ultrascale Computing (NESUS)* and *Energy-Efficient High Performance Computing Working Group (EEHPC WG)*. His work has been published in a well-reputed journals, conferences and books. Arsalan is a member of editorial board for Journal of Electrical and Electronic Engineering. Furthermore, He also served as a reviewer at many reputed journals, conferences and books, i.e., Elsevier VLSI, IEEE/ACM CCGRID 2017, MKP Technologies - Cyber Tech Publishing, etc. He had been awarded with *outstanding contribution in reviewing* by Elsevier in 2017. He has interests in: high performance heterogeneous computing and energy-aware parallel computing/programming.

RESEARCH EXPERIENCE

SEPTEMBER 2016 – PRESENT

Ph.D. Researcher
Heterogeneous Computing Lab (HCL)

Meeting the Future Challenges of Heterogeneous and Extreme-Scale Parallel Computing:

Project addresses the most challenging issues of parallel computing on modern heterogeneous and hybrid compute nodes, complex large-scale heterogeneous clusters, and extreme-scale platforms. It focuses on the models, algorithms, methods, software, systems and development practices which will facilitate improved utilization of the modern and perspective hardware platforms.

JULY 2015 – SEPTEMBER 2016

Research Associate
EMWITECH

Team lead in a research project

A Benchmark suite for Hard Real time Systems:

This project includes development of EMWIBENCH, i.e., a benchmark suite to help system designers select the optimal processors and to explore design space solutions.

SEPTEMBER 2013 – NOVEMBER 2015

Research Assistant
Advanced Computer Architecture lab,
HITEC

National ICT R&D Fund, Pakistan Funded Project worth PKR. 27.16 Million

Multicore Reconfigurable Processor Platform for Energy and Throughput Aware Applications:

The scope of this research project included the development of an FPGA based reconfigurable multicore architecture that support runtime reconfiguration of cache size and associativity, number of cores and operating frequency.

EDUCATION

2016 – PRESENT **Ph.D. in Heterogeneous Computing**
University College Dublin, Ireland **Supervisor:** Alexey Lastovetsky

2012 – 2016 **BS Electrical Engineering**
HITEC University, Pakistan
Gold Medalist

RESEARCH ACTIVITIES

- Performance counters based energy modeling of heterogeneous parallel architectures
- Computer Architecture, Multicore/Multithread architectures
- Performance Benchmarking, Power and Performance aware Scheduling in MPSoCs
- Design Space Exploration for MPSoCs

TEACHING ACTIVITIES

SEPTEMBER 2016 – PRESENT

Demonstrator
School of Computer Science, UCD

Following are modules in which I have been demonstrating at UCD:

- *High Performance Computing (COMP40730) - Spring 2018*
- *Information Visualisation (COMP30750) - Spring 2018*
- *Computer Programming II (COMP10120) - Spring 2018*
- *Unix Programming (COMP20200) - Spring 2018*
- *Processor Design (COMP30080) - Fall 2017*
- *Digital System (COMP20020) - Fall 2017*
- *Object-orientated programming (COMP30070) - Fall 2017*
- *Computer Programming II (COMP10120) - Spring 2017*
- *Unix Programming (COMP20200) - Spring 2017*
- *Cloud Computing (COMP41110) - Fall 2016*

ORGANIZATION

NOVEMBER 2015 – SEPTEMBER 2016

President
TechHub

Igniting curiosity and bringing ideas under spotlight
TechHub was a non-profit student organization, powered by EMWITECH in Pakistan. TechHub aimed to promote research culture and encourage people to work dynamically on new researches and come up with innovations.

JANUARY 2018 – CURRENT

Co-founder & Chief Operating Officer (COO)

KATech

The Students and Professionals World

KATech is a software limited company registered with the Republic of Ireland and based in Dublin. KATech was formed in early 2018. We aim to revolutionize software technology by bringing innovation to e-commerce & education sectors through the unique user-friendly environment and ultra-smart design.

INVITED TALKS & WORKSHOPS

- Jan 24, 2018 - Delivered talk on "Additivity: A Criteria to Select Performance Events for

Reliable Energy Predictive Analytical Modeling" at 3rd NESUS winter school & PhD Symposium; *Organized by NESUS in Zagreb, Croatia*

- Feb 22, 2017 - Delivered talk on "Performance Evaluation of Heterogeneous Computing Platforms" at 2nd NESUS winter school & PhD Symposium; *Organized by NESUS in Calabria, Italy*
- Jan 5, 2017 - Delivered talk on "Seeking research grants"; *Organized by HITEC Alumni Association, Pakistan*
- Mar 17, 2016 - Delivered workshop on "Cycle Accurate System Simulators"; *Organized by TechHub at HITEC University, Pakistan*
- Feb 04, 2016 - Delivered workshop on "Introduction to \LaTeX "; *Organized by TechHub at HITEC University, Pakistan*
- Jan, 2016 - Delivered Technical Session of "Workshop on Reconfigurable Computing"; *On behalf of Algorithm team, Advanced Computer Architecture Lab, HITEC*
- Apr, 2015 - Organized Technical workshop on LEON3 & Reconfigurable FPGA Architectures; *Funded by ICT R&D Fund, Ministry of IT, Pakistan*
- Oct, 2014 - Organized Technical workshop on FPGA Architectures; *Funded by ICT R&D Fund, Ministry of IT, Pakistan*

PROFESSIONAL AFFILIATIONS

- European Cooperation in Science and Technology (COST) action - Network for Sustainable Ultrascale Computing (NESUS) [2016-2018].
- Energy and Power Aware Job Scheduling and Resource Management Team (EPA JSRM) @ Energy-Efficient High Performance Computing Working Group (EEHPC WG) [2017-present].
- Institute of Electrical and Electronics Engineers (IEEE) [2017-2018].

CERTIFICATIONS

- 2014 **Using BigSheets for Spreadsheet-like Analytics**
Issued by IBM through Big Data University
- 2014 **Big Data Hadoop Fundamentals**
Issued by IBM through Big Data University
- 2014 **Big Data Fundamentals**
Issued by IBM through Big Data University
- 2013 **Learn to Program: The Fundamentals**
Issued by University of Toronto, Canada, through Coursera

AWARDS AND GRANTS

- 2018 **Awarded with Gold Medal: Best Final Year Project of Institute in BS Electrical Engineering, HITEC**
By HITEC, Pakistan
- 2018 **Third NESUS Winter School & PhD Symposium 2018 (Zagreb, Croatia)**
By COST European Cooperation in Science and Technology
- 2018 **Awarded with: Outstanding Contribution in Reviewing**
By Elsevier Publishing Group, Netherlands
- 2017 **Merit Scholarship for BS Electrical Engineering Program**
By Pakistan Ordinance Factories (P.O.F)
- 2017 **Second NESUS Winter School & PhD Symposium 2017 (Calabria, Italy)**
By COST European Cooperation in Science and Technology
- 2016 **Full Fee Scholarship for Ph.D. program**
By Science foundation Ireland & UCD
- 2016 **Research stipend for PhD**
By Science foundation Ireland
- 2014 **Educational Stipend for 2.5 years**
By Ministry of IT, Pakistan
- 2014 **Full Fee Scholarship during undergraduate program for 1 year**
By Ministry of IT, Pakistan
- 2016 **Got Selected for Training of Master Trainers**
Youth Social Entrepreneurship; Organized by YES Network, Pakistan & British council, UK
- 2015 **Academic Scholarship for distinction in semester**
By HITEC University, Pakistan
- 2015 **8th Best Innovation Award**
In 4th Invention to Innovation Summit Conference, Pakistan
- 2015 **IBM explorer batch**
Issued by IBM
- 2014 **Best semester project**
First position awarded by EE Dept., HITEC
- 2014 **Participated in IEEE week**
NUCES, Pakistan

REVIEWING ACTIVITIES

- Editorial Board Member, Journal of Electrical and Electronic Engineering, Science publishing group
- Reviewer, ElSevier VLSI Integration journal
- PC Member, CCGRID2017: 17th IEEE/ACM International Symposium on Cluster, Cloud and Grid Computing. Madrid, Spain, May 14-17, 2017
- MKP Technologies, Cyber Tech Publishing, USA
- Reviewed chapter in Q. Hassan (Ed.), "Innovative Research and Applications in Next-Gen High Performance Computing", IGI Global, USA

PUBLICATIONS

Journal Papers

Arsalan Shahid, M. Yasir Qadri, Martin Fleury, Hira Waris, Ayaz Ahmed, Nadia N. Qadri, "AC-DSE: Approximate Computing For the Design Space Exploration of Reconfigurable MPSoCS", in *Journal of Journal of Circuits, Systems and Computers*, vol. 17, no. 9, 2018, World Scientific, Impact Factor: 0.481

Arsalan Shahid, Muhammad Fahad, Ravi Reddy, Alexey Lastovetsky, "Additivity: A Selection Criterion for Performance Events for Reliable Energy Predictive Modeling" in *Supercomputing Frontiers and Innovations:*

Arsalan Shahid, M. Tayyab, M. Yasir Qadri, Nadia N. Qadri, Jameel Ahmed, "Analytical Models of Energy and Throughput for Caches in MPSoCS", in *"Malaysian Journal of Computer Science"* (Submitted)

Book Chapters

Arsalan Shahid, Bilal Khalid, Shahtaj Shaukat, Hashim Ali, M. Yasir Qadri, "Internet of Things Shaping Smart Cities: A Survey" In: Dey N., Hassanien A., Bhatt C., Ashour A., Satapathy S. (eds) *Internet of Things and Big Data Analytics Toward Next-Generation Intelligence*. Studies in Big Data, vol 30., Springer USA, 2017. 335-358. doi:10.1007/978-3-319-60435-0_14

Arsalan Shahid, Bilal Khalid, Muhammad Yasir Qadri, Nadia N. Qadri and Jameel Ahmed. "Design Space Exploration Using Cycle Accurate Simulator." *Innovative Research and Applications in Next-Generation High Performance Computing*. IGI Global, USA, 2016. 66-79. doi:10.4018/978-1-5225-0287-6.ch004

Arsalan Shahid, Maryam Murad, Muhammad Yasir Qadri, Nadia N. Qadri and Jameel Ahmed. "Hardware Transactional Memories: A Survey." *Innovative Research and Applications in Next-Generation High Performance Computing*. IGI Global, USA, 2016. 47-65. doi:10.4018/978-1-5225-0287-6.ch003

Arsalan Shahid, Saad Arif, Muhammad Yasir Qadri and Saba Munawar. "Power Optimization Using Clock Gating and Power Gating: A Review." *Innovative Research and Applications in Next-Generation High Performance Computing*. IGI Global, USA, 2016. 1-20. doi:10.4018/978-1-5225-0287-6.ch001

Conference Papers

Mashal Ahmed B., **Arsalan Shahid**, M. Yasir Qadri, Khalid Hussain, "Fingerprinting Non-Numeric Data Sets Using Row Association and Pattern Generation" In *"International Conference on Communication Technologies (ComTech-2017)"*, IEEE, 2017.

Arsalan Shahid, Muhammad Yasir Qadri, Nadia Nawaz, and Jameel Ahmed. "XenoJetBench: An open source hard-real-time multiprocessor benchmark." In *6th International Conference on Intelligent and Advanced Systems (ICIAS)*, pp. 1-6. IEEE, 2016.

SOFTWARE SKILLS

GOOD LEVEL	C, C++, Matlab, HTML 5, CSS, Batch Programming, \LaTeX , MARSSx86, MCPAT, CACTI, Microsoft Office, Proteus, Linux (Ubuntu, Red Hat, Backtrack, Kali, Mint, Fedora), Parallel Programming (OpenMP, MPI), Real Time Programming (Xenomai)
INTERMEDIATE	Java, Python, Java Script, IBM Big Data InfoSphere, Hadoop, AutoCAD, Adobe Illustrator
BASIC LEVEL	Adobe (Photoshop, Flash)

GENERAL SKILLS

- Excellent communication skills
- Good leadership skills
- Results-driven, logical and methodical approach to achieving tasks and objectives
- Reliable and dependable