

Curriculum Vitae

Shahrukh Agha

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Education:

2002 – 2006: PhD Electronic System Design
Loughborough University, Loughborough, UK
*Dissertation: Software and Hardware Techniques for Accelerating MPEG2
Motion Estimation*

2001 – 2002: MSc Digital Communication Systems (Distinction)
Loughborough University, Loughborough, UK

1995 – 2001: BSc Electronics Engineering,
University of Engineering, Taxila, Pakistan

Professional Experience:

2007 – Present: Assistant Professor,
Department of Electrical Engineering, COMSATS Institute of Information
Technology, Park Road, Chak Shahzad, Islamabad

Teaching and Research Supervision:

Fall 2009: Graduate courses on “Computer Aided Design of Digital Systems”,
“VLSI Architectures and Algorithms”,
“VLSI System Design”,
“Special Topics in Digital Signal Processing”.

Spring 2016: Graduate course on “VLSI System Design”
Undergraduate course on “Digital Logic Design”

Fall 2016: Undergraduate course on “Electric Circuit Analysis”

Spring 2017: Undergraduate course on “VLSI System Design”
Graduate course on “Design of System on Chip”

Fall 2017: Undergraduate course on “Electric Circuit Analysis”
Graduate course on “Design of System on Chip”

Spring 2018: Undergraduate course on “VLSI System Design”

Final Year Projects: More than 20 Final Year Projects supervised.

MS Projects: 10 MS thesis supervised.

PhD Projects: 3 Phd Thesis supervised related to Iris Recognition for Biometric Systems, Space Radiation Effects on VLSI Circuits and Efficient Topologies for Network On Chip

Services:

- Reviewer “International Conference on Frontiers of Information Technology, Islamabad, Pakistan
- Reviewer, ‘Journal of Frontiers of Computer Science’, <http://www.springer.com/computer/journal/11704>

Research Interests:

- Software and Hardware Techniques for Accelerating Computationally Complex Applications,
- Real Time Low Power VLSI Architectures and SoC (System On Chip) design,
- Parallel Processing,
- Video Encoding,
- Configurable and Extensible Processor design,
- Digital Signal Processing,
- Digital Image Processing,
- Digital Communication Systems

Computer Skills:

Fortran 77, C/C++, Visual C++, VHDL, Perl, Matlab, Simulink, Java, Linux, Unix (Solaris), Microsoft Office, Clips/LISP (Artificial Intelligence), HTML, CSS, Java Script, Latex, FPGA (VHDL, Verilog), DSP (C programming), POSIX, 8051 and AVR microcontrollers, Verilog, Microwind, Cadence Synthesis Tools, Xilinx Synthesis Tools.

List Of Publications:

Journals:

- [1] Usman Gulzari, Sheraz Anjum, Shahrukh Agha, “**An Efficient and Scalable Cross-By-Pass-Mesh Topology for Networks-on-Chip**”, IET Computers & Digital Techniques, 2017, DOI: 10.1049/iet-cdt.2016.0184, I.F: .517
<http://digital-library.theiet.org/content/journals/10.1049/iet-cdt.2016.0184>.

- [2] Usman Gulzari, Muhammad Sajid, Shahrukh Agha, “**A New Cross-By-Pass-Torus Architecture Based on CBP-Mesh and Torus Interconnection for on-Chip Communication**”, PLoS ONE 11(12): e0167590, 2016, I.F.: 3.23
- [3] Muhammad Sajid, Shahrukh Agha, “**Space radiation environment prediction for VLSI microelectronics devices onboard a LEO Satellite using OMERE-TRAD software**”, Advances in Space Research, vol. 56, issue 2, 2015, pp. 314-324, I.F.: 1.3
- [4] Shahrukh Agha, Shahid Ahmed Khan, Shahzad Malik, Raja Ali Riaz, “**Reduced Bit Low Power VLSI Architectures for Motion Estimation**”, Journal of Systems Engineering and Electronics, vol. 24, issue 3, 2013, pp. 382 – 399, I.F.: .276
- [5] F. Jan, I. Usman and S. Agha, “**A non circular iris localization algorithm using image projection function and gray level statistics**”, Optik – Int. J. Light Electron Opt., vol. 124, 2013, pp. 3187-3193, I.F.: .52
- [6] Jan F. , Usman I. , Agha S, “**Reliable iris localization using Hough transform, histogram-bisection, and eccentricity**”, Signal Processing, Volume 93, Issue 1, January 2013, pp. 230-241, I.F.: 1.74
- [7] Farmanullah Jan, Imran Usman, Shahrukh Agha, “**Iris localization in frontal eye images for less constrained iris recognition systems**”, Digital Signal Processing, vol. 22, Issue 6, 2012, pp. 971-986, I.F.: 1.87
- [8] F. Jan, I. Usman, S. Agha, “**Reliable iris localization using integral projection function and 2D-shape properties**”, Chinese Optics Letters, Vol. 10, Issue 11, 2012, pp. 111501-111501, I.F.: .96
- [9] V. A. Chouliaras, V. M. Dwyer, S. Agha, J. L. Nunez-Yanez, D. Reisis, K. Nakos, K. Manolopoulos, “**Customization of an embedded RISC CPU with SIMD extensions for video encoding: A case study**”, Integration, the VLSI journal, vol. 41, issue 1, 2008, pp. 135 – 152, I.F.: .611
- [10] V. A. Chouliaras, S. Agha, T. R. Jacobs, V. M. Dwyer “**Quantifying the benefit of thread and data parallelism for fast motion estimation in MPEG-2**”, IEE Electronic Letters, vol. 42, issue 13, 2006, pp. 747-748, I.F.: 0.97
- [11] S. Agha, V. M. Dwyer and V. A. Chouliaras, “**Motion estimation with low resolution distortion metric**”, Electronic Letters, vol. 41, No. 12, 2005, pp. 693 – 694, I.F.: 0.97

Conferences:

- [1] Shahrukh Agha, Farman ullah Jan, Dilshad Sabir, Khurram Saleem, Usman Gulzari, Atif Shakeel, “**Optimal Motion Estimation using Reduced bits and its low power VLSI Implementation**”, Proc. of the 2017 IEEE International Conference on Signal and Image Processing Applications (IEEE ICSIPA 2017), Malaysia, September 12-14, 2017
- [2] Sheraz Anjum, Usman Ali Gulzari, Shahrukh Agha, “**Cross By Pass-Mesh Architecture for on-Chip Communication**”, 9th IEEE MCSoc-15 Symposium, 23-25 September 2015 in Turin, Italy.
- [3] Muhammad Sajid, Frank Sill Torres, N.G. Chechenin, E.U.Khan, Shharukh Agha, “**Space Radiation Environment Prediction for VLSI microelectronics devices onboard a LEO Satellite using OMERE-Trad Software**”, in 40th COSPAR Scientific Assembly, 2-10 August, 2014, Moscow, Russia.
- [4] F. Jan, I Usman and S. Agha, “**Less-constrained Iris Biometric System for VW (Visible Wavelength) Data**”, in: Symposium on Research Innovation in IT and Engineering (RIITE), April 2013, COMSATS Institute of Information Technology, Attock, Pakistan

- [5] Usman Ali Gulzari, Sheraz Anjum, Shahrukh Agha, Sarzamin Khan, “**A 2-Dimensional Router for 2D Mesh Network for on Chip Communication**”, in International Conference on Modeling and Simulation (ICOMS 2013), 25-27 November, 2013, Air University, Islamabad, Pakistan.
- [6] Vincent M Dwyer, Shahrukh Agha and Vassilios A Chouliaras , “**Reduced-Bit, Full Search Block-Matching Algorithms and their Hardware Realizations**”, Proceedings of the 7th International Conference in Advanced Concepts for Intelligent Vision Systems (ACIVS 2005), 20-23 September 2005, pages 372 - 380, University of Antwerp, Antwerp, Belgium.
- [7] Vassilios A. Chouliaras, Vincent M. Dwyer and Shahrukh Agha, “**On the performance improvement of sub-sampling MPEG-2 Motion Estimation Algorithms with vector/SIMD architectures**”, Proceedings of the 7th International Conference in Advanced Concepts for Intelligent Vision Systems (ACIVS 2005), 20-23 September 2005, pages 595 – 602, University of Antwerp, Antwerp, Belgium
- [8] Chouliaras, V., Nunez-Yanez, J.L. and Agha, S., “**Silicon Implementation of a Parametric Vector Datapath for Real-Time MPEG2 Encoding**”, 6th IASTED International Conference on Signal and Image Processing , Honolulu, Hawaii, 23-25 August 2004, pp 298-303.
- [9] V. M. Dwyer, S. Agha and V. Chouliaras , “**Low Power Full-Search Block Matching using reduced bit SAD values for early termination**”, Proceedings of Mirage 2005 International conference on Computer Vision/Computer Graphics collaboration techniques, INRIA Rocquencourt Paris, France, 1-2 March 2005, pages 191 – 196

References:

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