



Dr Hashim Ali

CONTACT INFORMATION	Assistant Professor Department of Computer Science and Engineering HITEC University, Taxila	Cell: +92-317-1717546 Work: +92-51-4908146-50; Ext:357 E-mail: hashim.ali@hitecuni.edu.pk
RESEARCH INTERESTS	My main research interests are in the field of embedded system design, computer architecture, reconfigure-able computing, machine learning, pervasive computing, algorithm design, human-centered design, internet of things (IoTs).	
EDUCATION	Ph.D. Computer Science (Embedded Systems)	January 2012 - February 2015
	University of Milano-Bicocca, Milan, Italy,	
	<ul style="list-style-type: none">• Thesis Topic: Subject-dependent Physical Activity Recognition Using Single Accelerometer Sensor• Adviser: Professor Roberto Bisiani, Department of Information Systems and Communications• Area of Study: Embedded Systems, Sensor Networks, Machine Learning	
	M.S. Engineering of Computing Systems	October 2008 - March 2011
	Politecnico di Milano, Milan, Italy	
	<ul style="list-style-type: none">• Thesis Topic: Security Aspects in Evolution of Enterprise Business Applications Framework• Adviser: Professor Stefano Zanero, Department of Electrical and Electronics Engineering• Major Subjects: High Performance Computing, HW/SW Co.Design Methodologies, Artificial Intelligence and Robotics, Foundations of Operation Research, Embedded System Design and Applications, Advanced Information Retrieval Systems	
	B.S. Computer Engineering	January 2002 - December 2005
	University of Engineering and Technology, Taxila, Pakistan	
	<ul style="list-style-type: none">• FYP Topic: Simulation and Implementation of Physical and Data-Link Layer of CDMA2000 Modem; Using Matlab, ModelSim and Verilog on Spartan XS-100 FPGA• Honors in Engineering• Major Subjects: Computer Architecture, Digital Design, Embedded Systems, Algorithm Design, Signal and Systems, DSP, Wireless Systems	
CURRENT ACADEMIC APPOINTMENT	HITEC University, Taxila, Pakistan	
	Assistant Professor	August 2015 to present
	<ul style="list-style-type: none">• <u>Administrative Activities:</u><ul style="list-style-type: none">• Incharge of academic activities related to BS Computer Engineering Program.• Incharge of Outcome Based Education (OBE) system implementation for Computer Engineering Program.• Member Curriculum Review Committee (CRC) - BS & MS Computer Engineering Program.• Incharge of activities related to Research and Development (R&D) and Final Year Projects (FYP).	

- Taught Courses:
 - Advanced Embedded Systems (MS-Level)
 - Advanced Computer Architecture (MS-Level)
 - Intelligent Systems (MS-Level)
 - Mobile and Pervasive Computing (MS-Level)
 - Microprocessor and Interfacing Techniques (BS-Level)
 - Computer Organization and Architecture (BS-Level)
 - Digital Logic Design (BS-Level)
- Supervision of graduate and undergraduate students in engineering and computer science.

External Examiner

MS Thesis Evaluator

- University of Engineering and Technology Taxila (4 - students)
- University of Lahore, Gujarat Campus, Gujarat (8 - students)

RMC Member

- University of Engineering and Technology Taxila

PREVIOUS ACADEMIC APPOINTMENTS

Norwegian University of Science and Technology, Trondheim, Norway

Guest Researcher

March 2014 to December 2014

Research collaboration in FARSEEING EU project for elderly, in order to devise an efficient algorithm for physical activity classification using wearable sensors.

- Researched the impact of different wearable sensors at different locations w.r.t physical activity and number of sensors. Conducted survey about subjects acceptance towards body-attached system.
- Systematic data analysis using Matlab, design and development of mathematical model using ML and data mining, determination of optimum statistical parameters.
- Delivered seminars and conducted a short course on IoT and health-care technologies.

University of Milano-Bicocca, Milan, Italy

Researcher @ NOMADIS Research Lab

January 2012 to February 2014

I collaborated with other researchers focusing on integration of Wireless Sensor Networks (WSN) and Body Sensor Networks. I conducted research on exploiting body-attached sensor/s data using machine learning techniques and issues related to WSN while applying indoor localization techniques.

- Sensor knowledge and familiarity with MEMS, Ambient sensors and Pressure sensors.
- Signal processing and sensor fusion with the understanding of sensors and models.
- Understanding of distributed wireless sensor networks and body sensor networks.

Teacher Assistant

October 2012 to July 2013

- Machine Learning, Graduate-Level Course
- Embedded System Design, Graduate-Level Course
- Advanced Topics in Human Computer Interaction, Graduate-Level Course

Center of Advanced Studies in Engineering, Islamabad, Pakistan

Research Assistant

October 2005 to February 2006

- Implementation of Physical and Data-Link Layer of CDMA2000 modem in an existing project.
- Development of DSP Control Algorithms, Simulations and their implementation.

Teacher Assistant

October 2005 to February 2006

- Signals and Systems (BS-Level)
- Network Analysis (BS-Level)

PROFESSIONAL
EXPERIENCE**Contexta Network Solutions Srl, Milan, Italy**Embedded Systems Engineer**April 2011 to February 2014**

Worked and managed part of Contexta-CARE product, designed in the context of independent living of elderly. My task was to develop WSN embedded system and its integration with non-wearable sensors.

- Detailed review of distributed WSN and body sensor networks, digital signal processing and fusion of sensor and model design.
- Developed embedded firmware using computing software C/C++, JAVA, and Python scripts.
- Developed embedded system integration with different sensors, inter communication within WSN, based on IEEE802.15.4.
- Developed low-level software drivers and interfacing SPI, I2C, UART, TCP/IP communication protocols.
- Infrastructure liaising with clients and testing and evaluation of the real-time embedded system.

Cargo Clay Srl, Milan, ItalySoftware Programmer**April 2010 to December 2010**

Analysis, design and implementation of security mechanism in evolution of web information system towards Enterprise Service Bus Framework using MULE ESB software framework based on JAVA API's.

- Detailed study of the existing web information system.
- Understanding of the software requirements, needed security mechanism and integration of ESB framework as a backbone of the newly designed and improved web information system.

Air Weapons Complex (AWC), Hassanabdal, PakistanAssistant Manager**June 2006 to September 2008**

Worked as team member in the project and supervised 4 members within the project task.

- Experience in electronic design, prototyping, testing & evaluation for aerial vehicles.
- Experience of Real-Time embedded hardware and software based co-simulation systems development and the use of an integrated development environment for 8-16-32-bit processors (DSP and FPGA).
- Integration of different sensors, ADC & DAC by Measurement Computing Corp. (DAQ-6703 & DAQ-6030), Data Translations (dt322) & National Instruments (PCI-6052E).
- Coordinated in embedded software development, debugging and functional and system level testing.
- Experience in multi-threaded application development and algorithm design in digital signal processing environment.
- Experience in RTL design: knowledge of Verilog and VHDL design experience.
- Experience with digital simulation tools like PsPice, MicroSim, MATALB/Simulink.
- Developed Telemetry software using Visual C++ and experience in Hardware in Loop Simulation for embedded systems.
- Optimized algorithm development using C++(Integration of 3-axis Motion Simulator and Control Computer using ScramNet+) for testing Navigational Algorithms.
- Experienced the agile working environment.
- Weekly meeting with project director and technical documentation preparation.

PEER-REVIEWED
PUBLICATIONS

- [1] Khursheed Aurangzeb, Irfan Haider, Muhammad Attique Khan, Tanzila Saba, Kashif Javed, Tassarwar Iqbal, Amjad Rehman, **Hashim Ali**, Muhammad Shahzad Sarfraz, Human Behavior Analysis based on Multi-types Features Fusion and Von Nauman Entropy based Features Reduction, Journal of Medical Imaging and Health Informatics, Vol. 9(4), pp. 662-669, American Scientific Publishers, May 2019.

- [2] MA Khan, T Akram, M Sharif, M Awais, K Javed, **Hashim Ali**, T Saba, CCDF: Automatic system for segmentation and recognition of fruit crops diseases based on correlation coefficient and deep CNN features, *Computers and Electronics in Agriculture*, Vol. 155, pp. 220-236, Elsevier Science Ltd., 2018.
- [3] **Hashim Ali**, Nousheen Akhtar, Muhammad Younus Javed, An Optimized Risk Management Model Based on Software Risk Factors Analysis, *Advanced Science Letters*, Vol. 24(2), American Scientific Publishers USA, pp. 1936-6612, April 2018.
- [4] **Hashim Ali**, Nousheen Akhtar, Muhammad Younus Javed, An Optimized Risk Management Model Based on Software Risk Factors Analysis, 2017 International Conference on Art, Business, Education and Social Sciences (ABESS'2017), Langkawi, Kedah, Malaysia, August 2017.
- [5] Usman Ahmed, **Hashim Ali**, Faraz Ahsan, Intelligent and Flexible Home Automation System, International Conference on Innovative Computing, Lahore, Pakistan, September 2016.
- [6] Muhammad Zubair, **Hashim Ali**, Muhammad Younus Javed, Automated Segmentation of Hard Exudates Using Dynamic Thresholding to Detect Diabetic Retinopathy in Retinal Photographs, International Conference on Innovative Computing, Lahore, Pakistan, September 2016.
- [7] **Hashim Ali**, Muhammad Younus Javed, Parameter Estimation and Error Analysis Using Bootstrap Technique For Physical Activity Recognition, 3rd International Conference on Engineering & Emerging Technologies, Lahore, Pakistan, April 2016.
- [8] **Hashim Ali**, Enza Messina, Roberto Bisiani, Subject-Dependent Physical Activity Recognition Model Framework with a Semi-supervised Clustering Approach, European Modelling Symposium (EMS), Manchester, U.K., November 2013.
- [9] Davide Merico, Roberto Bisiani, **Hashim Ali**, Demonstrating Contexta-CARE: A situation-aware system for supporting independent living, 7th International Conference on Pervasive Computing Technologies for Healthcare (PervasiveHealth), Venice, Italy, May 2013.
- [10] **Hashim Ali**, Davide Merico, Roberto Bisiani, Contexta-CARE: A Situation-Aware Independent-Living System, in ForItAAL 2012, IV Italian Forum on Ambient Assisted Living, Parma, Italy, October 2012.
- [11] Davide Merico, Roberto Bisiani, **Hashim Ali**, Reti di sensori a supporto dell'Assisted Living. Automazione e Strumentazione, Rome, Italy, March 2012.
- [12] Davide Merico, **Hashim Ali**, Roberto Bisiani, VoroLoc : Location Estimation Using Particle Filters , Voronoi Graphs and Ambient Sensor Data, IPIN 2012, Sydney, Australia.
- BOOKS [13] **Hashim Ali**, Physical Activity Recognition Using Single Sensor: A Novel Approach, Germany: Lambert Academic Publishing, 2016, ISBN:978-3-659-74659-8.
- BOOK CHAPTERS [14] Arsalan Shahid, Bilal Khalid, Shahtaj Shaukat, **Hashim Ali**, M. Yasir Qadri, Internet of Things Shaping Smart Cities: A Survey in Internet of Things and Big Data Analytics Toward Next-Generation Intelligence, *Studies in Big Data* Vol. 30, Dey Nilanjan, Ed: Charm, Springer International Publishing, 2017, pp. 335-358.
- THESIS [15] **Hashim Ali**, Subject-dependent Physical Activity Recognition Using Single Accelerometer Sensor, Department of Information Systems and Communications, UNIMIB, 2015, Available Online.
- [16] **Hashim Ali**, Security Aspects in Evolution of Enterprise Business Applications Framework, Department of Electrical and Electronics Engineering, POLIMI, 2011.
- CONFERENCE SERVICE Program Committee: International Conference on Intelligent Computing (ICIC 2016), Lahore, Pakistan, September 23–24, 2016.

PROFESSIONAL MEMBERSHIPS	<ul style="list-style-type: none"> • IAENG Member (2016–present) • IEEE Member (2012–present) • PEC Registered Engineer (2006–present)
AWARDS	<ul style="list-style-type: none"> • Best Research Paper Award (ICEET 2016) • Industrial Funding for Doctoral Studies (2012-2014) • Post-graduate Scholarship (2008-2011)
HARDWARE AND SOFTWARE SKILLS	<p>Embedded and Real-time Systems:</p> <ul style="list-style-type: none"> • Software and hardware development with several MCU and DSP platforms (e.g., Intel MCU's, Texas Instruments DSP's, Atmel ATmega MCU's, Jennic, Microchip etc) <p>Computer Programming:</p> <ul style="list-style-type: none"> • C, C++, UNIX shell scripting (including POSIX.2), GNU make, JAVA, Assembly, Verilog, VHDL, and others <p>Numerical Analysis:</p> <ul style="list-style-type: none"> • MATLAB, R, Mathematica <p>Version Control and Software Configuration Management:</p> <ul style="list-style-type: none"> • Git, VCS (CVS, SVN) <p>Desktop Editing and Productivity Software:</p> <ul style="list-style-type: none"> • T_EX (L^AT_EX, B_IB_TE_X), • Microsoft Office, OpenOffice.org, LibreOffice, Google Docs <p>Operating Systems:</p> <ul style="list-style-type: none"> • Microsoft Windows family, Apple OS X, Linux
EXPERTISE	<p>Computer Architecture:</p> <ul style="list-style-type: none"> • Computer Organization and Architecture, Microprocessors and Micro-controllers, Digital System Design, Embedded System Design, Hardware Software Co-design, VLSI Architecture, System on Chip Design. <p>Computing:</p> <ul style="list-style-type: none"> • Real-time Systems, Intelligent Systems, Pervasive Computing, Data Mining, Machine Learning, Soft Computing.
REFERENCE	Available upon request.