Dr. Engr. Sami Ur Rahman

Assistant Professor
Department of Computer Science
University of Malakand
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Academic Education

Degree	Year	Institution	Country
Postdoc	2016	Stradford University	USA
PhD	2012	University of Technology, Darmstadt (Thesis: An Image Processing based Patient-Specific Optimal Catheter Selection)	Germany
MS	2009	Albert-Ludwig University, Freiburg (Thesis: Super resolution Reconstruction of Cardiac Images)	Germany
M.Sc	2001	University of Peshawar	Pakistan
B.A (Hons)	1998	University of Peshawar	Pakistan

Professional Experience

Duration	Position	Organization
May. 2013 – *Till date*	Assistant Professor	University of Malakand, Pakistan
May. 2016 – Oct 2016	Visiting Professor	Stratford University, USA
Apr. 2009 –Dec. 2012	Research Associate	Darmstadt University of Technology, Germany
Feb. 2003 – Mar. 2009	Lecturer	University of Malakand, Pakistan
Jan. 2003 – Mar. 2003	Lecturer	N-W.F.P. University of Engineering and Technology, Pakistan
Aug. 2002 – Jan. 2003	Lecturer	Qurtuba University Peshawar, Pakistan
Aug. 2001 –Nov 2001	Lecturer	CECOS University Peshawar, Pakistan

Research Grants

Project Title	Year	Donor Agency	Amount
Computer Assisted System for the Detection of Anaemic Diseases (CASDAD) (under review)	2019	Pakistan Science Foundation	2.0 Millions
Optimal Catheter Selection for Angiography (under review)	2019	ICT R&D	Rs 7.0 Millions
Fellowship Grant	2016	Stratford University, USA	US $ 40,000
Computer Vision Based Navigation System for Blind People	2016	ICT R&D	Rs. 8 Millions
Class Attendance Based On CCTV Camera	2015	ICT R&D	Rs. 51000
Bags Counting using CCTV Camera	2014	ICT R&D	Rs. 47000
An Improved Artificial Bee Colony Algorithm for Training Multilayer Perceptron In Time Series Prediction	2014	HEC	Rs. 169000
Patient-specific catheter selection	2011	German Research Organization	€ 3500

Research Publications

Publications in Journals

1.	Fakhre Alam, Sami Ur Rahman, Nasser Tairan, Habib Shah, Mohammed Saeed Abohashrh, and Sohail Abbas "An Automatic Medical Image Registration Approach Based on Common Sub-regions of Interest" Journal of Medical Imaging and Health Informatics, Vol. 9, 251–260, 2019	
2.	Fakhre Alam, Sami ur Rahman "Interested Subregion Detection and Registration: A Narrative Review of Challenges and Solutions in Multimodal Medical Images" Journal of Medical Imaging and Radiation Sciences;50(1):24-30, 2019	
3.	Muhammad Ilyas, Sami Ur Rahman, Muhammad Waqas, and Fakhre Alam. "A Robust Algorithm for Fruits Recognition System."	

	Transylvanian Review 1, no. 1 (2018).
4.	Muhammad Raees, Sehat Ullah, Sami ur Rahman "VEN-3DVE: Vision based Egocentric Navigation for 3D Virtual Environment" International Journal on Interactive Design and Manufacturing (IJIDeM), 13 (1), 35–45, 2019
5.	Fakhre Alam, and Sami Ur Rahman. "Challenges and Solutions in Multimodal Medical Image Subregion Detection and Registration." *Journal of medical imaging and radiation sciences* (2018).
6.	Fakhre Alam, Sami Ur Rahman, Aziz Ud Din, Fawad Qayum Medical Image Registration: Classification, Applications And Issues JPMI, VOL. 32 NO. 4, 2018
7.	Sami ur Rahman, Sana Ullah, Sehat Ullah "Obstacle Detection in Indoor Environment for Visually Impaired Using Mobile Camera" Journal of Physic, Vol 960 (1), 2018
8.	Fakhre Alam, Sami Ur Rahman, Sehat Ullah, Kamal Gulati, "Medical Image Registration in Image Guided Surgery: Issues, Challenges and Research Opportunities", Bio cybernetics and Biomedical Engineering, Volume 38, pages 71-89, 2017
9.	Bakht Azam, Sami Ur Rahman, Fakhre Alam, Arif Raza Khan, Naveed Alam, "Automated Differential Blood Count Using Image Quantization", Journal of Medical Sciences, Volume 25(4), pages 457-465, 2017
10	Sehat Ullah, Numan Ali and Sami Ur Rahman, "The Effect of Procedural Guidance On Students' Skill Enhancement in a Virtual Chemistry Laboratory", Journal of Chemical Education, Volume 93(12), pages 2018-2025, 2016
11	Sami Ur Rahman, Adnan Khalil, Fakhre Alam, "A Review on Image Processing Based Optimal Catheter Selection", Journal of Cardiovascular Diseases, 2017;13(1):23 -27)
12	Irshad Khalil, Adnan Khalil, Sami Ur Rehman, Hammad Khalil, Rahmat Ali Khan, Fakhre Alam, "Classification of ECG Signals Using Legendre Moments" International Journal of Bioinformatics and Biomedical Engineering, 1(3), 284-291, (2015)
13	Fakhre Alam, Sami Ur Rahman, Shah Khusro, Sehat Ullah, "Evaluation of Medical Image Registration Techniques Based on Nature and Domain of the Transformation", Journal of Medical Imaging and Radiation Sciences, 47(5), (2016)
14	Mohammad Raees, Sehat Ullah, Sami ur Rahman, Ihsan Rabbi, "Image based recognition of Pakistan Sign Language", Kuwait Journal of Engineering Research, 4(1), 2016
15	Hussain Rahman, Sami ur Rahman and Fakhrud din "Automatic Segmentation of the Aorta in Cardiac Medical Images", The Nucleus 54, No. 2 (2017) 90-96
16	Ihsan Rabbi, Sehat Ullah, Sami Ur Rahman, Aftab Alam:

		"Extending the Functionality of ARToolKit to Semi-controlled / Uncontrolled Environment", International journal on information 06/2014; 17(6 (B)):2823-2832
	17	Sami Ur Rahman, Hussain Rahman, Fakhrud Din, Sehat Ullah, and Aziz Uddin, "An Investigation of Challenges in Automatic Segmentation of Medical Images", Bahria University Journal of Information & Communication technologies, Volume 10 (1) , 2018
	18	Fakhre Alam, Sami ur Rahman, Adnan Khalil, Sehat Ullah, Shah Khusro, "Quantitative Evaluation of Intrinsic Registration Methods for Medical Images", Sindh University Research Journal (Sci. Ser.) Vol. 49 (1), 43-48 (2017)
	19	Muhammad Raees, Sehat ullah and Sami ur Rahman, "CHORDBALL: A Rotation Technique for 3d Virtual Environments", Pakistan Journal of Science (Vol. 69 No. 1 March, 2017)
	20	Fakhre Alam, Sami Ur Rahman, Muhammad Hassan, Adnan Khalil "An Investigation Towards Issues and Challenges in Medical Image Registration", Journal of Postgraduate Medical Institute, 2017; 31(3): 224-33.
	21	Adnan Khalil, Sami Ur Rahman, Fakhre Alam, Hammad Khalil and Kamal Gulati, "An Enhanced Algorithm for Optimal Catheter Selection During Coronary Angiography", Pakistan Journal of Science, Volume 69(4), pages 397-402, 2017
	22	Muhammad Hassan, Sami Ur Rahman, Fakhre Alam, Zafar Ali, Saeed Alam "Effect of Rising Habit On Human Health Using ECG Signals", Journal of Postgraduate Medical Institute (Peshawar - Pakistan), Volume 30, pages 364-370, 2016
	23	Sehat Ullah, Dawar Khan, Sami ur Rahman, Aftab Alam, "Marker Based Interactive Writing Board for Primary Level Education", Pakistan Journal of Science, Volume 68(3), pages 366-371, 2016
	24	Fakhre Alam, Sami Ur Rahman, Adnan Khalil, Shah Khusro, and Muhammad Sajjad, "Deformable Registration Methods for Medical Images: A Review Based on Performance Comparison", Proceedings of the Pakistan Academy of Sciences , Volume 53(2), pages 111-130, 2016
	25	Fakhre Alam, Sami ur Rahman, Sehat Ullah, Adnan Khalil, "A Review On Extrinsic Registration Methods for Medical Images", Technical Journal, UET Taxila, Pakistan, Volume 21(3), pages 110-119, 2016
	26	Fakhre Alam, Sami ur Rahman, "Intrinsic Registration Techniques for Medical Images: A State of the art review", Journal of Post Graduate Medical Institute, 30(2), 119-132, 2016
	27	Muhammad Hassan, Sami Ur Rahman, Amin Ur Rahman, "Heart's Role Beyond a Blood Pumping Machine: A Literature Review in Modern Perspective", J. Appl. Environ. Biol. Sci., Volume 6(1), pages 197-210, 2016
	28	Shah Khalid, Sehat ullah, Sami ur Rahman, "A New Task Distribution Model to Increase User Performance in Collaborative Virtual Environment", Jurnal Teknologi, 50 (4), (2016)

29	Hussain Rahman, Fakhrud Din, Sami ur Rahman, Sehat Ullah, "Performance Evaluation of Region-Growing Based Segmentation Algorithms for Segmenting the Aorta", Jurnal Teknologi, 50 (4), (2016)
30	Usman Rauf, Sami-ur-Rahman, Adeel Zafar, Uzair Muhammad, "Optimal Catheter Selection for Anomalous Right Coronary Arteries", Jurnal Teknologi, Volume 78(8), pages 54-58, 2016
31	Fakhre Alam, Sami ur Rahman, Shah Khusro, and Shaukat Ali, "Towards a Semantic Web Stack Applicable for Both RDF and Topic Maps: A Survey", Technical Journal, UET Taxila, Pakistan, 20(2), (2015)
32	Fakhre Alam, Muhammad Abid Khan, Sami ur Rahman, Shah Khusro, and Shaukat Ali, "Resource Description Framework and Topic Maps: Complementary or Competitive"? Proceedings of the Pakistan Academy of Sciences 52 (1): 1–14 (2015)
33	Sami ur Rahman, Muhammad Hassan, "Heart's Role in the Human Body: A Literature Review", J. Appl. Environ. Biol. Sci. 2014; 1: 199-208
34	Sami ur Rahman, Waheed Ullah: "Computer Aided Primary Education Systems (CAPES): A Review", J. Appl. Environ. Biol. Sci. 2014; 1: 304-308
35	Fakhre Alam, Sami Ur Rahman, Shah Khusro, Shaukat Ali, "A Road Map for Killer Applications in Resource Description Framework (RDF) and Topic Maps", Sci.Int.(Lahore),27(1),185-190, 2014

Publications in Conferences

1. Sami ur Rahman, Amin ur Rahman, Fakhre Alam
   An Algorithm for Extracting Centerline of the Aorta from CT/MR 3D images
   International Conference on Biomedical Signal and Image Processing (ICBIP 2018)
   (accepted)
2. Sami ur Rahman, Sana Ullah, Sehat Ullah
   A Mobile Camera Based Navigation System fFor Visually Impaired People
   2nd International Conference on Imaging, Signal Processing and Communication
   2018 (accepted)
3. Sami ur Rahman, Sana Ullah, Sehat Ullah,
   "Obstacle Detection in Indoor Environment for Visually Impaired Using Mobile
   Camera"
   Proceeding of the 2017 International Conference on Communication, image and
   signal processing (CCISP). Shenzen, China
4. Bakht Azam, Sami ur Rahman, Sehat Ullah, Fazal Hanan
   "Detection of the Top Anemic Diseases in Blood Smear Images Using Image
   Quantization Followed by Ensemble of Classifiers"

Proceedings of the 2017 4th International Conference on Biomedical and
Bioinformatics Engineering, Pages 115-120
Seoul, Republic of Korea

5. Shahzada Fahad, Sami ur Rahman, Imran Khan, Sanaul Haq
An Experimental Evaluation of Different Face Recognition Algorithms Using Closed
Circuit Television Images
Proceedings of 2017 IEEE 2nd International Conference on Signal and Image
Processing (ICSIP), Singapore, 2017, pp. 51-54.
doi: 10.1109/SIPROCESS.2017.8124504

6. Raees Khan Shah Sani, Sehat Ullah, Sami ur Rahman, Automated Marker
Augmentation
and Path Discovery in Indoor Navigation for Visually Impaired, SALENTO AVR
2017, Italy

7. Sami ur Rahman, Muhammad Hassan,
"Heart's Role in the Human Body: A Literature Review",
Proceedings of ICCSS 2014, Rize, Turkey

8. Sami ur Rahman, Waheed Ullah,
"Computer Aided Primary Education Systems (CAPES): A Review", Proceedings of
ICCSS 2014, Rize, Turkey.

9. Sami ur Rahman, Clara Thoene, Stefan Wesarg, Wolfram Voelker,
"Simulation based patient-specific optimal catheter selection for right coronary
angiography",
Proceedings of SPIE Medical Imaging 2012, San Diego, USA.

10. Sami ur Rahman, TsvetoslavaVateva, Stefan Wesarg
"Enhancing super-resolution reconstructed image quality in 3D MR images using
simulated annealing",
Proceedings of SPIE Medical Imaging 2012, San Diego, USA.

11. Sami ur Rahman; Stefan Wesarg, Wolfram Voelker,
"Patient Specific Optimal Catheter Selection for the Left Coronary Artery",
Emerging Technologies for Medical Diagnosis and Therapy 2011, Berlin, Germany.

12. Eugen Flehmann, Sami ur Rahman, Stefan Wesarg, Wolfram Voelker
"Towards Patient Specific Catheter Selection: Computation of Aortic Geometry
Based on Fused MRI Data",
Proceedings: Functional Imaging and Modeling of the Heart 2011, New York, USA

13. Sami ur Rahman; Stefan Wesarg, Wolfram Voelker:
"Patient specific optimal catheter selection for right coronary artery",
Proceedings of SPIE Medical Imaging 2011, Florida, USA.

14. Sami ur Rahman; Stefan Wesarg,
 Combining short-axis and long-axis cardiac MR images by applying a super-
resolution reconstruction algorithm,
Proceedings of SPIE Medical Imaging 2010, San Diego, USA.

15. Sami ur Rahman; Stefan Wesarg,
Upsampling of Cardiac MR Images: Comparison of Averaging and Super-Resolution
for the Combination of Multiple Views ,
10th IEEE International Conference on Information Technology and Applications in
Biomedicine . 2010. Corfu, Greece.

Reviewer/Membership of National/International Journals/Conferences

- Member of the Technical Program Committee of International Conference on Biomedical Signal and Image Processing (ICBIP 2018)

- Member of the Technical Program Committee of the International Conference on Imaging, Signal Processing and Communication (ICISPC'2018)

- Member of the Technical Program Committee of the International Conference on Communication, Computing, and Digital Systems (C-CODE 2017)

- Member of the International Advisory Committee in the International Conference on Control, Power, Communication and Computing Technologies (ICCPCCT-2018)

- Reviewer for The Nucleus (an International peered reviewed journal)

- Member of the Asia Pacific Institute of Science and Technology

Talks

- Talk on "A Mobile Camera Based Navigation System For Visually Impaired People" at 2nd International Conference on Imaging, Signal Processing and Communication (July 2018, Kuala Lumpur, Malaysia)
- Talk on "An Algorithm for Extracting Centerline of the Aorta from CT/MR 3D images" at International Conference on Biomedical Signal and Image Processing (ICBIP 2018) (August 2018, Seoul, South Korea)
- Talk on "An Experimental Evaluation of Different Face Recognition Algorithms Using Closed Circuit Television Images" at the International Conference on Signal and Image Processing, (August 2017, Singapore)
- Talk on "Importance of IT for Police Department" at Police Training School Swabi. (August 22nd, 2016)
- Talk on "IT skills" at the workshop of administrative staff at University of Malakand (September 16, 2015, University of Malakand)
- Keynote speaker talk on "Medical Imaging: Research Scope and Challenges" at the symposium on "Emerging technologies in IT (Aug 2013, baragali, Peshawar University Summer Campus).
- Talk on "Simulation based patient-specific optimal catheter selection" at the SPIE Medical Imaging Conference (February 2012, San Diego, USA.)

- Talk on: "Enhancing super-resolution reconstructed image quality in 3D MR images using simulated annealing" at the SPIE Medical Imaging Conference (February 2012, San Diego, USA)
- Talk on "Patient Specific Optimal Catheter Selection for the Left Coronary Artery" at conference on Emerging Technologies for Medical Diagnosis and Therapy (June 2011, Berlin, Germany)
- Talk on "Patient specific Catheter Selection" at conference on Functional Imaging and Modeling of the Heart (May 2011, New York, USA)
- Talk on "Patient specific optimal catheter selection for right coronary artery" at the SPIE Medical Imaging Conference (February 2011, Florida, USA)
- Talk on " Super-resolution reconstruction algorithm for cardiac images" at the SPIE Medical Imaging Conference (February 2010, San Diego, USA)

Teaching

Courses Taught

Mathematical Modeling, Cloud Computing, Big Data Analytics, Database Systems, Digital Image Processing, Medical Image Processing, Visualization in Medicine, Advanced Data Analysis, Data Structures, Professional Ethics, Web Technologies, Programming Languages (C++, Visual C++, Java, Scripting Languages), Computer Organization and Assembly Language, E-Commerce

Thesis Supervision

Ph.D Thesis Supervision

Student Name	Thesis	Session
Fakhre Alam	Registration of Medical Images Based on Common Sub regions	2014-17
Bakht Azam	Automatic Detection of Hereditary Hemolytic Anemia Using Shape Morphology of Red blood cells in peripheral Blood smear images (in progress)	2015-18
Adnan Khalid	Firearms detection in a CCTV image (in progress)	2017-19
Shehzada Fahad	CCTV Image Enhancement (in progress)	2017-19

M.Phil Thesis Supervision (Total 15)

Student Name	Thesis	Year
Sana Ullah	Obstacle Detection For Visually Impaired People In Indoor Environment Using Smart phone Camera	2018
Muhammad Niaz	An Image Processing Based Algorithm for Recognizing Leaf Related Tomato Diseases	2018

Mujahid Farooq	A Computer Based Testing System for Predicting Students' Interest In An Academic Discipline	2018
Muhammad Ilyas	An Image Processing Based Algorithm for The Automatic Diagnosis Of Tomato Fruit Diseases	2018
Imran Khan	Cctv Based Class Attendance System	2018
Amin ur Rahman	Geometry Computation Of Aorta And Coronary Arteries From 3d Mr/Ct Image Data	2018
Haseena Noureen	An Improved Algorithm for the Early Detection Of Breast Cancer in Ultrasound Images	2018
Irshad Khalil	Classification Of Electrocardiogram Signals and Medical Images Using Legendre Polynomials	2017
Muhammad Ismail	Automatic paper marking: An efficient, cost effective and user friendly algorithm	2017
Shehzada Fahad	An Experimental Evaluation Of Different Face Recognition Algorithms Using CCTV Image	2017
Adnan Khalil	An Enhanced Algorithm for Catheter Selection during Coronary Angiography	2017
Hussain Rahman	An Improved Algorithm for the Segmentation of Aorta From Three Dimensional Medical Images	2016
Muhammad Hassan	ECG Signal Classification and Analaysis of the Early and Late Risers	2016
Eduard Metlewski	Catheter and guidewire simulation using spring model	2012
UsmanRauf	Optimal catheter selection for anomalous Right Coronary Arteries (RCA	2011
Eugen Flehmann	Segmentierung der Aorta, Koronararterien und Bestimmung der geometrischen Parameter" (In German)	2011

Bachelor Thesis Supervision (Total 16)

Student Name	Thesis	Year
Muhammad Ijaz & Hanzala	A Mobile Application for Teaching Basic Tajweed	2017
Rafi ullah & Ijaz Ahmad	A Mobile Application for Teaching Basic Urdu	2017
Yunas Shah & Asif Iqbal	Android Based Interactive Software Tool for Teaching Mathematics to the Beginners	2016

Yar Muhamad, Abid Khan	Super resolution Reconstruction of Images	2016
Muhammad Waqas Murad Khan	Attendance Management System Based on CCTV Camera	2016
Muhammad Yaseen Khan, Fawad Ahmad	Human Body Organ Identification From Cctv Video Frames	2016
Zia ud din & Imad ud din	An Interactive English Learning Tool for the Students of Class One	2015
Tahir Ali & Ikram	An Interactive English Learning Tool for the Students of Class Prep	2015
Sohaib Khan & Karim ullah	An Interactive Mathematics Learning Tool for the Students of Class Prep	2015
Rabia Gul & Navid Muhammad	Conventional Teaching versus Computer Based Teaching: A Comparative Study	2015
Najm us Saqib & Saqib Rahim	Counting Flour Bags Using CCTV Camera	2014
Ghairat khan & Sajid Hussain	Employee Attendance System Based On Fingerprint Recognition	2014
Clara Thoene	*Catheter simulation for optional selection prior to coronary angiography*	2012
Tsvetoslava Vateva	Enhancing super-resolution reconstructed image quality in 3D MR images using simulated annealing	2012
Lilli Gong, André Hoffmann	*GUI for visualizing segmentation algorithm*	2011
Fakhrud din	Webserver Development	2006

Research Projects

Super-resolution Reconstruction of Cardiac Images, Carried out at University of Technology Darmstadt, Germany

Consistent penetration depth estimation for deformable collision response and rendering Haptic force feedback, Carried out at Albert-Ludwig University Freiburg, Germany

A C++/Matlab interface for the Sick LMS400 Laser range Scanner, carried out at Image Processing Lab, Albert- Ludwig University Freiburg, Germany

Software Projects
Software for the admission and accounts of schools.

Software for maintaining online accounts of traveling agencies

Software for maintaining the accounts of Internet Service Providers (ISP)

Administration

Leading Roles

- Head of the Department of Computer Science and IT from January 16th, 2014 till November 11, 2017.
- Convener of the Graduate Study Committee, Department of Computer Science, University of Malakand, January 16th, 2014 till Date.
- Convener of MS/PhD Program Department of CS & IT University of Malakand, November 2013 till May 2014.

Membership Roles

- Member of the Academic Council from November 2013 to November 2015
- Member of the Board of Faculty, Faculty of IT, University of Malakand, from January 2013 till Date
- Member of the Graduate Study Committee, Department of Computer Science, University of Peshawar, February 2016 till Date
- Member purchase committee, University of Malakand, January 2013 till date.
- Member purchase committee of the Department of Physics, University of Malakand for the purchase of equipment for the project titled "Computational Studies of Efficient Materials for Solar Cells Thermoelectric Devices",

Awards

- Fellowship award from Stratford University, USA
- Ph.D scholarship from Higher Education Commission of Pakistan
- M.S scholarship from Higher Education Commission of Pakistan
- German Academic Exchange Scholarship for six months German language course at Goethe Institute Lahore and at did Institute Munich Germany

Languages Skills

- English
- Urdu
- Pashto
- German (Basic Skills)

Countries visited *(Mostly for attending scientific conferences)*

- USA
- Germany
- France
- Italy
- Switzerland
- Austria
- Belgium
- UAE
- Russia
- Singapore
- Sri lanka
- Malaysia
- Thailand
- South Korea