Dr. Zobia Suhail

Personal Data

Other Name:	Zobia Suhail
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Research Profile:	https://www.researchgate.net/profile/Zobia_Suhail/publications

Work Experience

2014 - Current	*University of the Punjab (PUCIT) Pakistan, Lahore* Currently working as Assistant Professor
Oct 2017 - Dec 2017	*Department of Computer Science, Aberystwyth University, Wales, U.K* Worked on project CAD: Prostate Cancer Imaging in T2W MRI.
Oct 2016 - Aug 2017	*Department of Computer Science, Aberystwyth University, Wales, U.K* Served as Senior Demonstrator for the subject DataStructure & Algorithms.
From 2011 - 2014	*University of the Punjab (PUCIT) Pakistan, Lahore* Served as Lecturer for Computer Science subjects (DataStructures, DataBases, operating System...) to MSc and BSc.
2009 - 2011	*PUCIT*, University of the Punjab, Lahore, Pakistan Worked as Software Engineer and also as a team member of web development for developing website of the institution.
2004 - 2006	*Islamia Cantt College for Women* Cantt, Lahore, Pakistan Worked as lecturer to teach computer science subjects for ICS, BSC classes.
2002 - 2004	*Sui Northern gas Pileline Limited*, Lahore, Pakistan Worked as Assistant Programmer and was involved in developing some internal software modules for the IT department of SNGPL.

Education

2001 Bachelor of Sciences in Computer Science, **Allama Iqbal Open University**, Pakistan
Final Project: "Webiste for Internet Service Provider (ISP)"
Obtained marks / Total marks: 1709 /2300

2009 Master of Science in Computer Scince, **PUCIT**, University of the Punjab, Pakistan
Final Project: "MIS System"
CGPA: 3.92

2013 Master of Philosophy in Computer Scince, **PUCIT**, University of the Punjab, Pakistan
Thesis: "Automatic Detection of abnormalities in mammograms"
CGPA: 3.94

2019 Doctor of Philosophy in Computer Scince, **Aberystwyth University**, Wales, U.K
Thesis: "Detection & Classification of Mammographic Abnormalities"
Supervisor: Prof. Reyer Zwiggelaar, Aberystwyth University
Status: Completed in 2019.

Scholarships and Certificates

- Computer Science Department Overseas Scholarship (CSDOPS) (2015), Aberystwyth University, Wales, U.K.
- Overseas Scholarship and Travel Grant for pursuing PhD (2015), University of the Punjab, Lahore
- Gold Medalist, M.Sc(CS) (session 2007–2009), PUCIT, University of the Punjab, Lahore
- M.Sc Merit Scholarship (session 2007–2009), PUCIT, University of the Punjab, Lahore
- Best presentation reward for PhD final year presentation, (2017), Aberystwyth University, Wales, U.K.

Research Grants and Achievements

- Research Grant: Funding: USD 1500, University of the Punjab, Lahore, Pakistan for fiscal year: 2020–21
- Research Grant: Funding: USD 1500, University of the Punjab, Lahore, Pakistan for fiscal year: 2011–12
- Performance based evaluation award granted by University of the Punjab, Lahore for year 2018, 2019 and 2021
- Performance based evaluation award granted by University of the Punjab, Lahore for year 2021

Languages

Urdu:	Mothertongue
English:	Fluent
Arabic:	Basic Knowledge

Computer Skills

Basic Knowledge:	php, asp, jsp, mySQL, html, Access
Intermediate Knowledge:	VB, Excel, PowerPoint, GIMP, Adobe Photoshop, Flash
Programming Languages :	Cobol, Pascal, Fortran, Java, Python, Matlab
Operating System:	Windows, DOS
Documentation :	LaTeX, Word

Research Experience

- 2011 - 2012: Have worked on detecting several abnormalities in mammograms with collaboration of radiologist in INMOL hospital, Pakistan. Outcome of this work was journal publication.
- 2016 - 2019 : As a Postgraduate research student in Computer Science Department of Aberystwyth University, i did my research work in mammographic image analysis under supervision of Prof. Reyer Zwiggelaar (Aberystwyth University), where i used following datasets.
  Mammographic patches - DDSM database
  Segmented micro-calcification – DDSM database
  For the segmented micro-calcification, i worked on the classification of benign and malignant micro-calcification. Whereas for mammographic patches we are working

for the segmentation of masses in mammograms as well as the classification of benign and malignant masses. The outcome of this work is a journal and a conference publication.

- October 2017 - December 2017: Worked on project " CAD: Prostate Cancer Imaging in T2W MRI." with Prof. Reyer Zwiggelaar. The basic focus was to develop technique for gleason score classification for prostate cancer in T2 weighted MRI (T2w-MRI) images. The dataset was annotated by expert radiologist from Norwitch University Hospital, U.K. During that work techniques have been developed for 2-class and 3-class gleason score classification

Research Projects Supervised

- **PhD(CS)** Title: Detection and Classification of Knee Osteoarthritis [Status: Ongoing]
- **PhD(CS)** Title: Identifying pre-birth abnormalities in fetal image during first and second trimester using ultrasound images. [Status: Ongoing]
- **PhD(CS)** Title: Detection breast abnormalities using mammograms and Tomosyhthesis data - A collaboration with Aberystwytyh University [Status: Ongoing]
- **PhD(CS)** Title: Categorization of Bacterial Meningitis from Cerebral Malaria employing the Cerebrospinal Fluid Markers. [Status: Ongoing]
- **MPhil(CS)** Title: Optimal Feature Selection for Brain MRI Classification [Status: Completed]
- **MPhil(CS)** Title: Brain Tumor Radio Genomic Classification using Brain MRI [Status: Completed]
- **MPhil(CS)** Title: Detection and Classification of Acute Lymphoblastic Leukemia [Status: Completed]
- **MPhil(CS)** Title: Similarity Measurement of DNA Sequence Using DNA Images [Status: Completed]
- **MPhil(CS)** Title: Finding Influential Clinical Attributes for COVID-19 Mortality or Survival Rate: A Study Conducted on Local Hospital Data in Pakistan [Status: Completed]
- **MPhil(CS)** Title: Optimal Threshold Technique for Lung Area and Nodule Detection [Status: Completed]
- **MPhil(CS)** Title: Knee Osteoarthritis Detection using Image Processing and Deep Learning [Status: Completed]
- **MPhil(CS)** Title: Brain Tumor Detection and Classification using Brain MRI's [Status: Ongoing]
- **MPhil(CS)** Title: Breast Area Segmentation in Mammograms using Image Processing and Curve Fitting [Status: Ongoing]
- **MPhil(CS)** Title: Fetal Head Circumference Measurement using Image Processing [Status: Ongoing]
- **MPhil(CS)** Title: COVID-19 Lungs CT Scan Lesion Segmentation [Status: Ongoing]
- **MPhil(CS)** Title: COVID-19 and Pneumonia Classification using X-Ray Images [Status: Ongoing]
- **MPhil(CS)** Title: Glaucoma Identification in Eye Fundus Images using Image Processing [Status: Ongoing]
- **MPhil(CS)** Title: Pneumonia Detection and Multi-Class Classification using X-Ray Images [Status: Ongoing]

Publications

- **Suhail, Z.**, Sarwar, M., Murtaza, K. (2015). Automatic detection of abnormalities in mammograms. BMC medical imaging, 15(1), 53.
- **Suhail, Z.**, Denton, E. R., Zwiggelaar, R. (2017). Tree-based modelling for the classification of mammographic benign and malignant micro-calcification clusters. Multimedia Tools and Applications, 1-14.
- **Suhail, Z.**, Mahmood, A., Wang, L., Malcolm, P. N. and Zwiggelaar, R. (2018, July). A Voting-Based Encoding Technique for the Classification of Gleason Score for Prostate Cancers. In Annual Conference on Medical Image Understanding and Analysis (pp. 74-83). Springer, Cham.
- **Suhail, Z.**, Hamidinekoo, A. and Zwiggelaar, R. (2018). Mammographic mass classification using filter response patches. IET Computer Vision, 12(8), 1060-1066.
- **Suhail, Z.**, Hamidinekoo, A., Denton, E. R., Zwiggelaar, R. (2017, July). A Texton-Based Approach for the Classification of Benign and Malignant Masses in Mammograms. In Annual Conference on Medical Image Understanding and Analysis (pp. 355-364). Springer, Cham.
- Hamidinekoo, A., **Suhail, Z.**, Qaiser, T., Zwiggelaar, R. (2017, July). Investigating the Effect of Various Augmentations on the Input Data Fed to a Convolutional Neural Network for the Task of Mammographic Mass Classification. In Annual Conference on Medical Image Understanding and Analysis (pp. 398-409). Springer, Cham.
- **Suhail, Z.**, Denton, E.R. and Zwiggelaar, R., 2018. Classification of micro-calcification in mammograms using scalable linear Fisher discriminant analysis. Medical & biological engineering and computing, pp.1-11.
- **Suhail, Z.**, Zwiggelaar, R. et al., Multi-scale morphological feature extraction for the classification of micro-calcifications, 14th Internation Workshop on Breast Imaging (IWBI), 2018, Presentation due in July 2018.
- **Suhail, Z.**, Zwiggelaar, R. et al., Bag of visual words based approach for the classification of benign and malignant mass in mammograms using voting-based features encoding , 14th Internation Workshop on Breast Imaging (IWBI), 2018, Presentation due in July 2018.
- Hamidinekoo, A., **Suhail, Z.**, Denton, E., Zwiggelaar, R. (2018, July). Comparing the performance of various deep networks for binary classification of breast tumours. In 14th International Workshop on Breast Imaging (IWBI 2018) (Vol. 10718, p. 1071807). International Society for Optics and Photonics.
- Hamidinekoo, A., Dagdia, Z. C., **Suhail, Z.**, Zwiggelaar, R. (2018, December). Distributed Rough Set Based Feature Selection Approach to Analyse Deep and Hand-crafted Features for Mammography Mass Classification. In 2018 IEEE International Conference on Big Data (Big Data) (pp. 2423-2432). IEEE.
- Islam, A., **Suhail, Z.** (2022, July). Automatic classification and detection of abnormalities in mammograms using deep learning. In 16th International Workshop on Breast Imaging (IWBI2022) (Vol. 12286, pp. 206-215). SPIE.

Interests and Activities

Technology, Programming
Wed Development, Medical Imagine Processing, Machine Learning
Badminton, Travelling, watching current affair programs

References

- **Reference 1:**
  Prof. Reyer Zwiggelaar [Head of the Graduate School,
  Director of Research (IMPACS)] (PhD Supervisor)
  Aberystwyth University,
  Aberystwyth, Wales, U.K
  Phone no: +44 (0)1970 628691
  email: rrz@aber.ac.uk
- **Reference 3:**
  Christine Zarges [Lecturer]
  Aberystwyth University, Aberystwyth, Wales, U.K
  Phone no: +44 (0)1970 622452
  email: chz8@aber.ac.uk
- **Reference 2:**
  Neil Mac Parthaláin [Research Fellow]
  Aberystwyth University, Aberystwyth, Wales, U.K
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