# Faculty Profile

1. **Name:** Dr. Savita Gupta
2. **Designation:** Professor
3. **Department:** Computer Science & Engineering, UIET, Panjab University, Chandigarh.
4. **Educational Background:** **B.Tech(CSE), M.E(CSE) and PhD**

| **Examination** | **Board/University** | **Year Of Passing** | **% Marks Obtained** | **Division** |
|---|---|---|---|---|
| **Ph.D**(Computer Sc. & Engg.) | Punjab Technical Univ., Jalandhar | 2007 | | |
| **M.E.** (Computer Sc. & Engg.) | T.I.E.T., Patiala | 1998 | 90% (10 CGPA) | First with Honours |
| **B.Tech** (Computer Science & Engg.) | T.I.T.S., Bhiwani | 1992 | 84.14% | First (Gold Medalist) |
| **10+2** | H.B.S.E., Bhiwani | 1988 | 84% | National Merit Scholarship Holder |
| **Matriculation** | H.B.S.E., Bhiwani | 1986 | 83% | National Merit Scholarship Holder |

5. **Research Areas:** Signal and Image Processing, Network Security, Medical Image Analysis, Cognitive enhancement, Machine Intelligence, Wavelets based Signal and Image processing, Wireless Sensor Networks.

6. **Experience:**

| **Name Of Institute** | **Post Held** | **Pay Scale** | **Period Of Service** | **Brief Description Of Duties** |
|---|---|---|---|---|
| UIET, Panjab University, Chandigarh | Professor(CSE) | 37400 - 67000 + 10000 AGP | 03.12.2008 to till date | Teaching, Research and Administrative duties |
| SLIET, Longowal | A.P. (CSE) | 12000 – 420 8300/- | 05.03.1999 to 02.12.2008 | Teaching, Research and Administrative |

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|---|---|---|---|---|
| | | | | duties |
| SLIET, Longowal | Lecturer (CSE) | 2200 – 4000/- | 26.08.92 to 04.03.1999 | Teaching and Research |

**7. Research Projects Undertaken :**

| Period | Sponsoring Organisation | Title of Project | Grant Received |
|---|---|---|---|
| 2 Years (Mar '03-Mar'05) | MHRD (TAPTEC) | Design of Communication devices under computer software on speech synthesis & natural Language processing for visually handicapped users | 7.0 Lacs |
| 3 Years (Mar'00-Mar'03) | MHRD (MODROB) | Modernization of Labs by providing LAN facility | 10 Lacs |
| 1 year (July'98-July'99) | MHRD | Computer based secretarial practice for upliftment of women of weaker section | 8.0 Lacs |
| 3years (July 2009-July 2012) | DST (Fast Track Scheme) | Processing and Segmentation of Medical Ultrasound Images for Computer Aid Diagnosis | 11.0 lacs |
| 3years (July 2009-July 2012) | DST (PURSE Grant) | Development of Content based medical image compression Techniques for Telemedicine. | 43 lacs |

**8. PhD Guided : 05 (Completed) 09 (in Progress)**

## 9. List of Publications:

### a) International Journals:

1. S. Gupta, R.C. Chauhan and S.C. Saxena, "**A Wavelet Based Statistical Approach for Speckle Reduction in Medical Ultrasound Images**",*IEEE Journal of International Federation for Medical & Biological Engineering and Computing*, vol. 42, no. 2, pp. 189-192, 2004. (Impact factor 1.07)
2. S. Gupta, R.C. Chauhan and S.C. Saxena, "**Locally Adaptive Wavelet Domain Bayesian Processor for Denoising Medical Ultrasound Images using Speckle modeling based on Rayleigh Distribution**", *IEEE Proceedings on Vision, Image and Signal Processing*, vol. 152, no. 1, pp. 129-135, 2005. (Impact factor 0.655)
3. S. Gupta, R.C. Chauhan and S.C. Saxena, "**Robust Non-homomorphic approach for Speckle Reduction in Medical Ultrasound Images**", *IEEE Journal of International Federation for Medical & Biological Engineering and computing*, vol. 43, no. 2, pp. 189-195, 2005. (Impact factor 1.028)
4. S. Gupta, R.C. Chauhan and S.C. Saxena, "**Homomorphic wavelet thresholding technique for denoising medical ultrasound images**", Taylor & Francis, *International Journal of Medical Engineering and Technology (JMET)*, vol. 29, no. 5, pp. 208-214, 2005. (Impact factor 0.527, H Index 18)
5. L. Kaur, S. Gupta, R.C. Chauhan and S.C. Saxena, "**Medical ultrasound image compression using joint optimization of thresholding quantization and best-basis selection of wavelet packets**", Elsevier, *Journal of Digital signal Processing*, vol. 17, no. 1, pp. 189-198, 2007. (Impact factor 1.317)
6. S. Gupta, L. Kaur, R.C. Chauhan and S.C. Saxena, "**A Versatile Technique for Visual Enhancement of Medical Ultrasound Images**", Elsevier, *Journal of Digital signal Processing*, vol. 17, no. 1, pp. 542-560, May 2007. (Impact factor 1.317)
7. S. Gupta, R.C. Chauhan and S.C. Saxena, "**Impact of transform features on the performance of image denoising methods**", Elsevier, *Journal of Digital Signal Processing*, 2007. (Under review)

8. S. Gupta, R.C. Chauhan and S.C. Saxena, "**A low complexity speckle reduction method for US images using complex wavelets**", Taylor & Francis, *International Journal of Medical Engineering and Technology (JMET)*, 2007. (Under review)
9. G. Jindal and S.Kansal, "**Future Prospects and Technological Developments in CBIR" CSI-Adhayan**", *Journal of Computer Society of India*, pp. 16-23, Jul-Sep 2008.
10. J. Singh, L. Kaur and S. Gupta, "**Analysis of Intrusion Detection Tools for Wireless Local Area Networks**", *International Journal of Computer Science and Network Security*, vol. 9, no. 7, pp. 168-177, July 2009. (IJCSNS companies Impact factor 1.140)
11. J. Singh, L. Kaur and S. Gupta, "**Comparative study of Intrusion Detection Techniques for Wireless Local Area Networks**", *International Journal of Advanced in Communication Engineering*, vol.1, no. 1, 2009. (ISSN: 0975-6094)
12. M. Singh, S. Singh and S. Gupta, "**Comparative Analysis of Spatial Filters for Speckle reduction in Ultrasound Images**", *World Congress on Computer Science and Information*, *IEEE Computer Society*, vol. 6, no. 1, pp. 228-232, 2009.
13. J. Singh, S. Gupta and L. Kaur, "**A MAC Layer Based Defense Architecture for Reduction-of-Quality (RoQ) Attacks in Wireless LAN**", *International Journal of Computer Science and Information Security*, vol. 7, no. 1, pp. 284-291, January 2010. (IJCSNS companies Impact factor 1.140)
14. J. Singh, S. Gupta and L. Kaur, "**A Cross-Layer Based Intrusion Detection Technique for Wireless Networks**", *International Arab Journal of Information Technology*, vol. 7, no. 3, 2010.
15. J. Singh, L. Kaur and S. Gupta, "**Taxonomy of Attacks in Wireless Local Area Networks**", *International Journal of Advance Research in Computer Engineering*, vol. 4, no.1, May 2010. (ISSN: 1975-9339)
16. J. Singh, L. Kaur and S. Gupta, "**Improving Performance of Anomaly Based Network Intrusion Detection System**", *International Journal of Scientific Computing*, vol. 4, no. 1, June 2010. (Impact factor 1.707)
17. R. Kaur, L. Kaur and S. Gupta, "**Enhanced K-Mean Clustering Algorithm for Liver Image Segmentation to Extract Cyst Region**", *IJCA Special Issue on Novel Aspects of Digital Imaging Applications*, pp. 59-66, DIA 2011. (Impact factor 1.707)

18. G. Singh and S. Gupta, "**DHT based Routing Protocols for MANETs: A Survey**", *International Journal of Mobile And Adhoc Netwok*, vol. 2, no. 1, February, 2012. (ISSN (Print) 2249-202X)
19. A. Gupta, H.K. Verma and S. Gupta, "**Technology and Research developments in carotid image registration**", Elsevier, *Journal of Biomedical Signal Processing and Control-Special Issue: Biomedical Image Restoration and Enhancement*, vol. 7, no. 6, pp. 560-570, November 2012. (5 year impact factor 1.395)
20. Gagandeep, L. Kaur and S. Gupta, "**Overview of Lung Nodule Detection techniques**", *International Journal of Computer Application*, December 2012. (Impact factor 1.707)
21. Akshay Girdhar, Jaskarn Bhullar and Savita Gupta, "**Weighted variance based scale adaptive threshold for despeckling of medical ultrasound images using curvelets**," *Journal of Medical Imaging and Health Informatics*, vol. 5, no. 2, pp. 272-281, April 2015 (Thomson Reuters Indexed, SCI-IF-0.642).
22. Akshay Girdhar, Jaskarn Bhullar and Savita Gupta,"**Non-homomorphic technique for despeckling of medical ultrasound images using curvelet thresholding**," Advanced *Science Letters*, vol. 21, no. 1, pp. 107-111, February 2015 (Scopus Indexed, IF-1.253).
23. T. Kaur, B. S. Saini and S. Gupta, "**A Joint intensity and edge magnitude based multilevel thresholding algorithm for the automatic segmentation of pathological MR brain images**", *Neural Computing and Applications – Springer***,** 2016, pp. 1-24, doi: 10.1007/s00521-016-2751-4,**SCI, IF=2.505**.
24. T. Kaur, B. S. Saini and S. Gupta, "**A novel feature selection method for brain tumor MR image classification based on the Fisher Criterion and Parameter Free Bat Optimization**", *Neural Computing and Applications (S.I.: Data Pre-processing Methods for Signal and Image Classification) – Springer***,** 2017, pp. 1-14, doi: 10.1007/s00521-017-2869-z, **SCI, IF=2.505**.
25. T. Kaur, B. S. Saini and S. Gupta, "**Quantitative metric for MR brain tumor grade classification using sample space density measure of analytic intrinsic mode function representation**", *IET- Image Processing*, vol. 11, no. 8, pp. 620-632, **SCI, IF=1.044**.
26. T. Kaur, B. S. Saini and S. Gupta, "**A novel fully automatic multilevel thresholding technique based on optimized intuitionistic fuzzy sets and tsallis entropy for MR brain tumor image segmentation**", *Australasian Journal of Physical and Engineering*

*Sciences in Medicine – Springer***,** 2017, pp. 1-18, doi: 10.1007/s13246-017-0609-4, **SCI**, **IF=1.171**

27. T. Kaur, B. S. Saini and S. Gupta, "**A comparative study on Kapur's and Tsallis entropy for multilevel magnetic resonance image thresholding using Particle Swarm optimization algorithm**", *International Journal of computational system Engineering– Inderscience* (Accepted 2nd May, 2017; Current status: - In Production)
28. Gagan Deep, Lakhwinder Kaur and Savita Gupta, "**Biomedical image indexing and retrieval descriptors: A comparative study**", *Procedia Computer Sc*ience 85 (2016) 954 – 961. (doi: 10.1016/j.procs.2016.05.287)
29. Gagan Deep, Lakhwinder Kaur and Savita Gupta, "**Directional local ternary quantized extrema pattern: A new descriptor for biomedical image indexing and retrieval**", *Engineering Science and Technology, an International Journal* 19 (2016) 1895–1909. (http://dx.doi.org/10.1016/j.jestch.2016.05.006)
30. Gagan Deep, Lakhwinder Kaur and Savita Gupta, "**Local mesh ternary patterns: a new descriptor for MRI and CT biomedical image indexing and retrieval**", *Computer Methods in Biomechanics and Biomedical Engineering: Imaging & Visualization*, 2016. (DOI: 10.1080/21681163.2016.1193447)
31. Sran, Paramveer & Gupta, Savita & Singh, Sukhwinder., "**Recent Advances and Perspective of Studies on Visual Attention Models for ROI Extraction in Medical Images**", *International Journal of Control Theory and Applications*. Vol. 9. pp. 145-149, 2017.
32. Kakamanshadi, Gholamreza & Gupta, Savita & Singh, Sukhwinder. (2015), "***A Survey on Fault Tolerance Techniques in Wireless Sensor Networks***", 10.1109/ICGCIoT.2015.7380451.
33. Deepika Koundal, Savita Gupta and Sukhwinder Singh, "**Automated Delineation of Thyroid Nodules in Ultrasound Images using Spatial Neutrosophic Clustering and Level Sets**", *Applied Soft Computing*, vol.40, pp.86–97, 2016. (ELSEVIER) (SCI indexed & IF: 3.222) DOI: 10.1016/j.asoc.2015.11.035
34. Deepika Koundal, Savita Gupta and Sukhwinder Singh, "**Speckle reduction method for thyroid ultrasound images in neutrosophic domain***", IET Image Processing*, vol.10, no.2, pp.167-75, 2016. (SCI indexed & IF: 0.753 ) DOI: 10.1049/iet-ipr.2015.0231

35. Deepika Koundal, Savita Gupta and Sukhwinder Singh, "**Nakagami-based total variation method for speckle reduction in thyroid ultrasound images**", *Proceedings Institution of Mechanical Engineers Part H: Journal of Engineering in Medicine (SAGE*), vol.230, no.2, pp. 97-110, 2016. (SCI indexed & IF: 1.329) DOI: 10.1177/0954411915621340
36. Madan Lal, Lakhwinder Kaur, Savita Gupta, "**Speckle Reduction with Edge Preservation in B-Scan Breast Ultrasound Images**", *International Journal of Image, Graphics and Signal Processing*, Vol. 8, No. 9, pp. 60-68, 2016. (Published), Publishers: MECS. Indexing: IET Inspec.
37. Lal, Madan, Lakhwinder Kaur, and Savita Gupta. "**B-mode breast ultrasound image segmentation techniques: an investigation and comparative analysis**." *International Journal of Computational Systems Engineering* 4, no. 2-3 (2018): 171-184.
38. Lal, Madan, Lakhwinder Kaur, and Savita Gupta. "**Automatic segmentation of tumors in B-Mode breast ultrasound images using information gain based neutrosophic clustering***." Journal of X-ray science and technology Preprin*t (2018): 1-17.
39. Madan Lal, Lakhwinder Kaur, Savita Gupta, '**Modified Spatial Neutrosophic clustering Technique for Boundary Extraction of Tumors in B-Mode Breast Ultrasound Images**', *Journal of IET Image processing,2018.*

### b) Conference Proceedings

1. S. Gupta, L. Kaur and R. C. Chauhan, "**Wavelet based Image Compression using Daubechies filters**" NCC-2002, IIT Bombay, paper no. 99, Jan. 2002.
2. S. Gupta, L. Kaur and R. C. Chauhan, "**Comparison of wavelet and wavelet Packet based Image compression Techniques**" National Seminar on Challenges Ahead with IT (CAIT-2002) at SLIET, Longowal, Jan. 2002.
3. S. Gupta, L. Kaur, R.C. Chauhan and S. C. Saxena, "**A Wavelet based statistical approach for speckle reduction in medical Ultrasound Images**", Proc. of IEEE Conf, Tencon-2003, IISc, Bangalore.

4. L. Kaur, S. Gupta, R. C. Chauhan and S.C. Saxena, "**Compression of Ultrasound images using Wavelet Transform and Vector Quantization**," IEEE conf. on EMBS, JAPAN, 2003.
5. L. Kaur, S. Gupta, R. C. Chauhan and S. C. Saxena, "**Compression of Natural Images Using Haar Wavelet Transform**", National conference on Services through IT Enabled Systems, DRDE Gwalior, April 19-29, 2003.
6. S. Gupta, L. Kaur and R. C. Chauhan, "**Image Denoising using Wavelet Thresholding**" Indian Conference on Computer vision, Graphics and Image Processing (ICVGIP), Ahmedabad, India, 2003.
7. S. Gupta L. Kaur, R. C. Chauhan and S.C. Saxena, "**Image Denoising Using Adaptive Thresholding in Wavelet domain**", 4th EURASIP International Conference on Video / Image Processing and Multimedia Communications 2-5 July 2003, Zagreb, Croatia (IEEE sponsored).
8. S. Gupta, L. Kaur, R. C. Chauhan and S.C. Saxena, "**Speckle Reduction in Medical Ultrasound Images via Maximum A Posteriori Estimation of Wavelet Coefficients using Rayleigh Model for Speckle**", IEEE-ICPR Conf. on Pattern Recognition, UK, 2004.
9. S. Gupta, L. Kaur, R. C. Chauhan and S.C. Saxena, "**A Spatially Adaptive Wavelet Thresholding Technique for Speckle Reduction in Medical Ultrasound Images based on Nakagami Speckle Model**" IEEE-ICME conf. on Multimedia & Expo, Taiwan, 2004.
10. L. Kaur, S. Gupta, R. C. Chauhan and S.C. Saxena, "**Compression of Medical Ultrasound Images using Wavelet transform and Modified SPIHT Zero-tree Algorithm**", National Conf. cutting Edge Tech. in Elec. & Comm. SHSL-CIET, Longowal, 2004.
11. S. Gupta, L. Kaur, R. C. Chauhan and S.C. Saxena, "**Adaptive Spatial Filtering of Medical Ultrasound Images**" Proc. of National Conf. on Research and practices in IT (RPIT-2004), SHSL-CIET, Longowal, March 2004.
12. L. Kaur, S. Gupta, R. C. Chauhan and S.C. Saxena, "**Wavelet Coding of Medical Ultrasound Images Using An Adaptive Uniform Threshold Scalar Quantizer Based**

**on MDL Criterion**", 8th World Multi-conference on Systemics, Cybernetics and Informatics (SCI 2004), Orlando, USA, in July 18-21, 2004.

13. L. Kaur, R. C. Chauhan and S.C. Saxena, "**A Modified EZW Image Coder for Medical Ultrasound Images**", CERA-2005, IIT Roorkee, pp. 210-216, Sept. 2005.
14. S. Gupta, L. Kaur, R. C. Chauhan and S.C. Saxena, "**Despeckling Coherent images using Wavelets and Spatially Adaptive Thresholding based on Rayleigh Speckle Model**", CERA-2005, IIT Roorkee, Sept. 2005.
15. P. Bharti, S. Gupta and R. Bhatia, "**Comparative Analysis of Image Compression Techniques: A Case Study on Medical Images**", International Conference on Advances in Recent Technologies in Communication and Computing, pp. 820-822, October 2009.
16. G. Jindal, S. Gupta and L. Kaur, "**Integration of CBIR of medical images into PACS: introduction, Tools and Approaches**", International Conference on Engineering innovations- A fillip to economic development, February 2010.
17. M. Singh, S. Singh, S. Kansal, "**Texture analysis of Ultrasound images for Liver classification**" 4th International Conference on Computer Applications in Electrical engineering-Recent Advances, CERA-2009, IIT Roorkee, Feb 19-21, 2010
18. N. Kaur, N. Singla and S. Gupta, "**Review of Space-Frequency Quantization Techniques for Image Coding**", Proceedings of CHASCON-2011, ES106-ES110, Panjab University, Chandigarh, February 2011.
19. P. Anand, S. Gupta and M. Kaur, "**Emerging Approaches for Automated Mass Detection in Digital Mammograms**", Proceedings of CHASCON-2011, ES106-ES110, Panjab University, Chandigarh, February 2011.
20. S. Gupta, H.K. Kansal and R. C. Chauhan, "**Developing a filtering proxy server for Network Security**," World Congress-2000, Beijing, China, 2000.
21. S. Gupta, B. Singh, K. Chauhan and R. C. Chauhan, "An **approach to network intrusion detection**," International Conf. on Construction Industry, Disaster Management, and Environment Management: Challenges for Sustainable Development, Punjab, IE (I), Chandigarh, 18-20 Nov 2000.
22. S. Gupta, H.K. Kansal and R. C. Chauhan, "**Design of a filtering proxy server for world wide web**" National Conference on Data Communication (NCDC-2000), Computer Society of India (CSI), April 7-8, 2000, CSIO, Chandigarh, 2000.

23. S. Gupta, L. Kaur and R. C. Chauhan, "**Fingerprint Recognition Technique for Biometric Systems**" 16th National Convention of Indian Engineers at SLIET Longowal, March 10-11, 2001.
24. S. Gupta and R.C. Chauhan, "**E-Commerce & Economy: A future Scenario**", 13th Indian Engineering Congress, April 24-25, 1999.
25. R.C. Chauhan, S. Gupta, S. Singh and H. Kansal, "**Design of a video Conferencing system for distance Education**," 1st ISTE Convention, SHSLCIET, 9th September 1999.
26. S. Gupta, L. Kaur, and R. C. Chauhan, "**Training and HRD**" National Seminar on Human Values and HRD, SLIET Longowal, Nov. 1999.
27. Gupta, R. C. Chauhan, S. Singh and H. Kansal, "**Creating Convenient and Friendly Environment for Education and Training of the Handicapped in Technical Education**", National conference, QIP center, U.O.R, Roorkee, Roorkee, Dec.18-19, 1999.
28. Akshay Girdhar, Jaskarn Bhullar and Savita Gupta,"**Region based adaptive contrast enhancement of medical ultrasound images**," in IEEE International Conference on Computational Intelligence & Communication Technology, Ghaziabad,India, 2015, pp. 750-753.
29. T. Kaur, B. S. Saini and S. Gupta, "**Diseased MRI image segmentation using Shannon entropy and particle swarm optimization algorithm**", *Proceedings of the* 3rd International *Conference on Biomedical Engineering and Assistive Technologies (**Beats-2014**)*, UIET Chandigarh, Feb 14-15, 2014, pp. 80-84.

### c) Books Published

1. **S. Gupta, L. Kaur and J. Singh, A systematic Approach to Software Engg.** Paragon International Publisher, 2009. (ISBN: 81-89253-84-0)
2. **S. Gupta, L. Kaur and J. Singh,A text books of Operating Systems.** Khanna Book Publisher, New Delhi, 2008. (ISBN :9788190744812)

### d) Book Chapter Published

1) T. Kaur, B. S. Saini, and S. Gupta, "Optimized Multi Threshold Brain Tumor Image Segmentation Using Two Dimensional Minimum Cross Entropy Based on Co-occurrence Matrix," in **Medical Imaging in Clinical Applications, Springer International Publishing**, 2016, vol. 651, pp. 461–486.

2) Savita Gupta and Lakhwinder Kaur, "Wavelet despeckle filtering", in **Handbook of Speckle Filtering and Tracking in Cardiovascular Ultrasound Imaging and Video, Published by IET** , London , UK, January 2018, pp. 173-197.