

## Bio-Data

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**Current Area of Interest:** Digital Image Processing and Information Security

**Previous Area of Specialization:** Embedded System Design

### Summary of Experience

- Working as Associate Professor in Centre for Computer Science and Technology, Central University of Punjab, Bathinda since August 2015
- Worked as Assistant Professor in Department of Computer Science, Punjabi University, Patiala from 2005 till 2015.
- Worked with Centre for Development of Advance Computing C-DAC (formerly CEDTI), Mohali, India, a premiere research and development institute under the Government of India from June 2001 to April 2005 in various capacities (Project Officer, Senior Engineer and Design Engineer). Gained practical experience in Embedded System Design. Coordinated Advance courses like Diploma in Hardware System Design , Embedded System Design and conducted their main modules like 8/16/32 bit microcontroller programming & Interface, Digital Signal Processors etc. Was the member of core committee constituted to work out the details of M.Tech VLSI Design Project Proposal (submitted to Department of Information Technology (DIT), Ministry of Communication and Information technology Govt of India) regarding software, hardware, faculty requirement & training and also to work out the syllabus for the program. An amount of one crore was sanctioned for the project by DIT. Conducted many specialized short term courses in microcontrollers, DSP and Image Processing for professionals from undertakings like BEL, TBRL etc and B.E/M.E students from different institutes.
- Worked as lecturer at Guru TegBahadarkhalsa Polytechnic Malout (Pb) from May 1997 to June 2001.
- Worked as a lecturer at Adesh Polytechnic, Muktsar from January to May 1997.

### Professional Qualification

- B.E degree in Electronic Engineering from Nagpur University, Nagpur, India
- M.E degree with honours in Computer Science and Engineering from Thapar Institute of Engineering and Technology, Patiala, India
- Ph.D. in Computer Science from Punjabi University.

### Expertise

**Hardware:** Digital Signal Processors (ADSP 21XX Family),  
Microcontrollers (MCS 51, 8X251, 32 bit ARM)

**Software:** C, Various assembly languages, MatLab

### **Subjects Taught**

Microprocessors, Microcontrollers, Digital Signal Processors, Digital Signal Processing, Neural Networks & Fuzzy Logic, Digital Image Processing, Algorithm Analysis and Design, Data Communication, Digital Electronics, Computer Networks and Research Methodology.

### **Classes/Courses Taught**

Polytechnic, B.Tech, MCA, M.Tech and PhD Course work

### **Other Positions / Contributions**

- Coordinator of Centre of Computer Science and Technology
- Charge of Computer Centre
- Chairperson Board of Studies of Centre of Computer Science and Technology
- Nodal Officer NKN
- Nodal Officer for AISHE Portal
- Member Web Committee
- Reviewer IEEE and IET

### **Papers Published in Journal**

- [1]. Chandan Singh, Nitin Bhatia, Amandeep Kaur, "Hough Transform Based Fast Skew Detection and Accurate Skew Correction Methods", Pattern Recognition, Elsevier, 41, 2008, 3528-3546. DOI: <http://dx.doi.org/10.1016/j>, (Impact factor 3.291).
- [2]. Chandan Singh and Amandeep Kaur, Fast computation of polar harmonic transforms, Journal of Real Time Image Processing, Springer, 2012, DOI: 10.1007/s11554-012-0252-y, (Impact factor 1.02).
- [3]. Amandeep Kaur, Chandan Singh, Automatic cephalometric landmark detection using Zernike moments and template matching. Signal, Image and Video Processing, 2013, DOI: 10.1007/s11760-013-0432-7, (Impact factor 1.43). Indexed Publication (SCOPUS, INSPEC, Google Scholar, SciSearch, DBLP etc)
- [4]. Amandeep Kaur, Chandan Singh, A hybrid edge detector using fuzzy logic and mathematical morphology, International Journal of Image and Graphics, World Scientific, 10(2), 2010, 251-272. ISSN: 0219-4678. Indexed Publication (Indexed by DBLP, ioport.net)
- [5]. Amandeep Kaur, Chandan Singh, Modified Zernike moment masks for edge detection, International Journal of Computer Science and Engineering Systems, 4(4), 2010, 301-305. ISSN 0973-4406.
- [6]. Beant Kaur, Anil Garg, Amandeep Kaur, Mathematical Morphology Edge Detection For Remote Sensing Images, International Journal of Electronics & Communication Technology, 1(1), 2010, 29-31. ISSN: 2230-9543.
- [7]. Amandeep Kaur, Chandan Singh, Subpixel edge detection using pseudo-Zernike moments, International Journal of Signal processing, Image Processing & Pattern Recognition, 4(2), 2011, 107-118. ISSN: 2005-4254, Indexed Publication (Indexed by EBSCO, ProQuest, DOAJ, OpenJ-Gate, Cabell, EI Compendex)

- [8].Rajan Goyal, Amandeep Kaur, A Review of Optimal Binarization Technique on Documents with Damaged Background, International Journal of Computer Sciences and Technology, 2(2), 2011, 237-239. ISSN: 2229-4333, Indexed Publication (Indexed by Google Scholar, DOAJ, CiteSeerx, SCribd, .docstocetc)
- [9].Rakesh Singh, Amandeep Kaur, Comparative Analysis of Speckle Noise Reduction Techniques and Their Affect on Image Edge Localization, International Journal of Computer Sciences and Technology, 2(4), 2011, 78-82. ISSN: 2229-4333, Indexed Publication (Indexed by Google Scholar, DOAJ, CiteSeerx, SCribd, .docstocetc)
- [10]. Gurupjit Singh Brar, Amandeep Kaur, Analysis of Rotation Invariant Template Matching Techniques for Trademarks, International Journal of Engineering Research and Applications , 2(5), 2012, 1742-1747. ISSN: 2248-9622, Indexed Publication (Indexed by Google Scholar, DOAJ, CiteSeerx , Open J-gate, Index Copernicus, ProQuest)
- [11]. Hardeep Kaur, Amandeep Kaur, Illumination Invariant Face Recognition, International Journal of Computer Applications, 64(21), 2013, 23-27. ISSN: 0975-8887, Indexed Publication (Indexed by Google Scholar, ProQuest, INFORMATICS, NASA ads, EBSCO)
- [12]. Beant Kaur, Gurmeet Kaur, Amandeep Kaur, Detection and Classification of Printed Circuit Boards Defects, Open Transactions On Information Processing, USA, 1(1), 8-16, 2014. ISSN: 2374-3786 Indexed Publication (Indexed by Google Scholar, CrossRef)
- [13]. Paramjit Singh, Dr. Amandeep kaur , Contrast Enhancement of Color Images with Bi-Histogram, International Journal of Engineering Research and Applications, pp-26-29, Volume 4 Issue 6(Version 2), June 2014. ISSN: 2248-9622, Indexed Publication (Indexed by Google Scholar, DOAJ, CiteSeerx , Open J-gate, Index Copernicus, ProQuest)
- [14]. Amandeep Kaur, Rupali Goyal, & Anshu Chopra, Mathematical Morphology based edge detector for noisy and low contrast images, ATTI DELLA “Fondazione Giorgio Ronchi”, vol LXIV (3), pp 337-343, 2009. ISSN: 0391-2051.
- [15]. Amandeep Kaur, Rakesh Singh, Retinal blood vessel segmentation using phase congruency model, CiiT International Journal of Image Processing, 4(5), 2012, 244-249 . ISSN: 0974-9691.
- [16]. Chetan Sharma and Amandeep Kaur, Indian Vehicle License Plate Extraction and Segmentation, International Journal of Computer Science and Communication, 2(2), 2011, 593-599. ISSN: 09737341.
- [17]. Vipin and Amandeep Kaur, Facial Expressions Recognition Based on ULBP and Edge Map, CiiT International Journal of Image Processing, 4(14), 2012, 782-86. ISSN: 0974-9691.

### **Papers Published in Conference Proceedings**

- [1]. Amandeep Kaur and Chandan Singh, Adaptive Edge Directed Resampling for Image Zooming. Presented in ICISTM-2007, held at New Delhi.
- [2]. Amandeep Kaur and Tejinder Pal Singh, Fuzzy Approach to Edge Detection. Presented in 2<sup>nd</sup> International conference on Advanced Computing Communication Technologies held on November 3-4, 2007 at Asia Pacific Institute of Information Technology SD India Panipat, Haryana. pp 214-218.
- [3]. Amandeep Kaur, Smoothing Cephalographs using Modified Anisotropic Diffusion Filter, Proceedings of International Conference (IMPACT2009), 2009.
- [4]. Amandeep Kaur, Performance of Different Snake Models in Presence of Noise in Images. Presented in 5<sup>th</sup> International Conference on Downtrend Challenges in IT, held on May 22, 2009 at Punjab College of Technical Education, Ludhiana, 2009.

- [5].Amandeep Kaur, A simple edge detection algorithm for gray scale images using wavelets. Presented in 6<sup>th</sup> International Conference on Upcoming Trends in IT, held on May 22, 2009 at Punjab College of Technical Education, Ludhiana, 2009.
- [6].Amandeep Kaur, Chandan Singh, Fuzzy Zernike Moment Approach to Subpixel Edge Detection, Proceedings of International Conference on Informatics, Cybernetics, and Computer Applications (ICICCA2010), Jain University, Bangalore, India, July 19-21, 2010.
- [7].Amandeep Kaur, A Hybrid Algorithm for Automatic Cephalometric Landmark Detection. Presented in International Conference on Emerging Trends in Computer Science & Information Technology, held at Gulzar Group of Institutes, Khanna, Punjab, February 26, 2011.
- [8].Amandeep Kaur, Chandan Singh, Cephalometric X-ray registration using angular radial transform. Presented in International Conference on Recent Advances and Future Trends in IT, March 21-23, 2012.
- [9].Amandeep Singh, Amandeep Kaur: Iris Recognition System Using Local Features Matching Technique. SocProS 2012: 1015-1023.
- [10]. Beantkaur, Gurmeetkaur and Amandeep kaur, Study and Anlaysia of Defect Detection in Printed Circuit Boards using Image Subtraction Method. 2013
- [11]. Beantkaur, Gurmeetkaur and Amandeep kaur, Detection and Classification of Printed Circuit Boards using Image Subtraction Method. International Conference on Recent Advances in Engineering and Computational Sciences (RAECS 2014)
- [12]. Karamjeet Singh, Rakesh Singh, Amandeep Kaur, Combination of Maximum Likelihood Estimation and NLM filter for Speckle Noise Reduction,3rd International Conference on Biomedical Engineering & Assistive Technologies (BEAT2014)
- [13]. Sunita Rani, Amandeep Kaur, Review of Histogram Separation Based Contrast Enhancement Methods, Proceedings of 5<sup>th</sup> international conference on “Advances in Computer Sciences, software solutions, e-learning, information & communication technology” ACSEICT-2014. Proceeding published in Journal of Basic and Applied Engineering Research.
- [14]. Supinder Singh and Amandeep Kaur, Off-Line Signature Verification using Sub uniform Local Binary Patterns and support vector machine, proceedings of International Conference on Chemical Engineering & Advanced Computational Technologies (ICCEACT’2014) Nov. 24-25, 2014 Pretoria (South Africa)
- [15]. Amandeep Kaur and Gurvinder Singh, Partial Differential Equation Method for Image Zooming, Proceedings of 2<sup>nd</sup> National conference on Recent Advances and Future Trends in IT held on Feb 16-17, 2007 at Department of Computer Science Punjabi University, Patiala.
- [16]. Amandeep Kaur and Tejinder Pal Singh, Linear and Non Linear Edge Detection a Survey, Proceedings of National Seminar on Automation, Robotics and Mechatronics held on November 24, 2007, at Swami Vivekananda Institute of Engineering and Technology, Banur.
- [17]. Amandeep Kaur and Rajbir Kaur, Image Enhancement an Important Step in Machine Vision, Proceedings of National Seminar on Automation, Robotics and Mechatronics held on November 24, 2007, at Swami Vivekananda Institute of Engineering and Technology, Banur.
- [18]. Amandeep Kaur and Tejinder Pal Singh, Fuzzy Filters for Edge Detection, Proceedings of National Conference on Emerging Trends in communication held on Feb 20-21, 2009, at Swami Vivekananda Institute of Engineering and Technology, Banur.

- [19]. Amandeep Kaur and Rakesh Singh, Wavelets for Edge Detection in Noisy Images, Proceedings of National Conference on Computational Instrumentation (NCCI 2010), held at CSIO, Chandigarh, 19th-20th March, 2010.
- [20]. Amandeep Kaur and Karmjeet Singh, Speckle noise reduction by using wavelets, Proceedings of National Conference on Computational Instrumentation (NCCI 2010), held at CSIO, Chandigarh, 19th-20th March, 2010.

### **Seminars/workshops/Conferences Organized**

1. Organizing secretary national conference RAFIT 2007, organized in the department during Feb 16-17, 2007.
2. Organizing secretary RAFIP 2010, a one day seminar organized in the department held on March 31, 2010
3. Organizing secretary international conference ICISIL 2011 at the department of Computer Science, Punjabi University, Patiala during 9-11 March, 2011.
4. Organized 7-day National workshop on “Digital Image Processing using MATLAB” at Department of Computer Science, Punjabi University Patiala from 29-Nov-2012 to 05-Dec-2012.

### **Seminars/workshops/Conferences Attended**

1. Chandigarh Symposium on Microelectronics (CSME - 2003) held at Panjab University, from Feb 14-15 2003.
2. Faculty Orientation Programme for Diploma in Embedded Systems Design (DESD) August 25 to September 5, 2003.
3. ISTE Summer School on “VLSI Circuits Design using VHDL” sponsored by AICTE at Department of Electronics and Communication Engineering, Guru Nanak Dev Engineering College, Ludhiana from June 21-26, 2004.
4. UGC sponsored Refresher Course at Thapar Institute of Engineering and Technology, Patiala in Computational Mathematics, from Dec 12-31, 2005.
5. Patent Awareness Workshop sponsored by Technology Information Forecasting and Assessment Council, and DST Govt of India organized by Rayat&Bahra Institute of Engineering & Biotechnology, Sahauran (Mohali) and Patent Information Centre, Punjab State Council for Science & Technology Chandigarh held on Dec 9, 2006.
6. STC in Digital Signal Processing at NITTTR Chandigarh from August 21-25, 2006.
7. Faculty Orientation Programme at Academic Staff College, Panjab University, from March 1-28, 2008.
8. Two weeks FEP (Faculty Enablement Programme of Infosys) held at Thapar University, Patiala in July 2008.
9. UGC sponsored Refresher Course at Academic Staff College, Punjabi University, Patiala from May 17 to June 5, 2010.
10. Train the Trainer (TTT) Workshop on Life and Communication Skills held at Department of Computer Science, Punjabi University, Patiala in collaboration with placement cell, Punjabi University, Patiala and Infosys Technology Limited held on March 12-14, 2011.
11. UGC Sponsored One week National Workshop on Multilingual Technologies (NWMLT2013), held at Department of Computer Science Punjabi University Patiala from Nov 11-17, 2013.

## International/National Conferences Attended and Papers Presented

12. International Conference on Information Systems, Technology and Management, held at New Delhi, March 12-13, 2007.
13. International conference on Advanced Computing Communication Technologies held at Asia Pacific Institute of Information Technology SD India Panipat, Haryana, November 3-4, 2007
14. International Conference on DownTrend Challenges in IT held on May 22, 2009, Punjab College of Technical Education Ludhiana
15. International Conference on Upcoming Trend Challenges in IT held on May 21, 2010, at Punjab College of Technical Education Ludhiana
16. International conference on Emerging Trends in Computer Science & Information Technology held February 26, 2011 at Gulzar Group of Institutes, Khanna, Punjab
17. Recent Advances and Future Trends in IT held on February 16-17, 2007 at Department of Computer Science Punjabi University, Patiala.
18. National Seminar on Automation, Robotics and Mechatronics held, at Swami Vivekananda Institute of Engineering and Technology, Banur on November 24, 2007.
19. National Conference on Emerging Trends in communication held, at Swami Vivekananda Institute of Engineering and Technology, Banur on Feb 20-21, 2009.
20. A National Conference ACIE-10 held on November 11, 2010 at Indo Global College of Engineering, Architecture, Education, Abhipur.

## Research Guidance

### Ph.D.

S.No	Student Name	Thesis Topic	Year
1.	Beant Kaur	Automatic Defect Detection In Printed Circuit Boards	ongoing
2.	Devinder Singh	Improved Fuzzy Based NLM For MRI Noise Suppression	ongoing
3.	Ashu	Development Of Face Detection Technique In Still Images Comprises Problem Of Face-Occlusion And Non-Uniform Illumination	ongoing
4.	Usha	Effective Binarization For Degraded Document Images	ongoing
5.	Gurjinder Singh	Development of Contrast Enhancement Technique For Color Images Using Soft Computing	ongoing

### M.Phil

S.No	Student Name	Thesis Topic	Year
1.	Karmjeet Singh	Speckle noise reduction	2013
2.	Paramjeetsingh	An efficient contrast enhancement algorithm	2013
3.	Kamalpreet Kaur Brar	Comparative Study Of Different Wavelet Based Interpolation Techniques	2016

### M.Tech (CSE) and M.Tech (ICT)

S.No	Student Name	Thesis Topic	Year
1.	Nandita Singla	Improved Watershed Segmentation	2015
2.	Shantibala Singh	An Efficient Method of Information sharing through meaningful shares using visual cryptography	2015

3.	Varsha	Active contour model based image segmentation using level set method	2014
4.	Sunita	Analysis of contrast enhancement techniques based on histogram separation	2014
5.	Sapinder	Simple algorithm for signature verification that is scale and rotation invariant using LBP	2014
6.	Inderpreet	Image segmentation based on active contour model using snake method	2014
7.	Manpreet	Analysis of color models for detection of skin color	2014
8.	Tejinder Kaur	Prioritization of configuration selection for regression testing	2014
9.	RahatDevinder Singh	Ink Bleed through Removal	2013
10.	Medha	Speckle noise reduction in medical images	2013
11.	Rajinder Singh	Speech signal enhancement	2013
12.	Bhawani Sharma	Recognition of Indian paper currency using LBP	2012
13.	Alamdeep Singh	IRIS Recognition using local feature extraction techniques	2012
14.	Vipan	Facial expression recognition system based on LBP and edge map	2012
15.	Gurupjit Singh Brar	Analysis of rotation invariant template matching for trademarks techniques	2012
16.	Hardeep Kaur	Illumination invariant face recognition	2012
17.	Rajbir Kaur	An Effective Algorithm for ink bleed through removal in document image	2011
18.	Chetan sharma	An Automatic Text and Digit Extraction Algorithm for Vehicle Number Plates	2011
19.	Sukhdeepsingh	Edge Detection using Undecimated Wavelets	2011
20.	Rajan Goyal	Hybrid Binarization Technique for Historical Documents	2011
21.	Karamjeet Singh	Wavelet Based Speckle Noise Reduction	2010
22.	Rakesh Singh	Edge Detection using Wavelets	2010
23.	Shikha	Edge Preserving Image Zooming using Interpolation	2010
24.	Sandeep Kaur	Study and Analysis of Face Recognition Techniques Based on PCA	2010
25.	Anshu Chopra	Fuzzy Mathematical Morphology Based Edge Detection.	2009
26.	Navjeet Kaur	Image Segmentation using Balloon Snakes	2009
27.	Rajat	Image Segmentation using Active Contour Model	2009
28.	Rupali Goyal	Image Segmentation using Gray Scale Mathematical Morphology	2009

29.	RituMonga	An Efficient Circle Detection Algorithm Using Hough Transform	2009
30.	Amrit Kaur	An Approach for Edge Detection using Anisotropic Diffusion	2009
31.	Ishpreet Kaur	Image Enhancement Algorithm using Fuzzy Rules	2008
32.	Rajbir Kaur	A Partial Differential Equation Approach to Image Enhancement	2008
33.	Rajwinder Kaur	Fuzzy Inference Based Edge Detection	2008
34.	Gurvindersingh	A Partial Differential Equation Approach to Image Zooming	2007
35.	Harvinder Kaur	Image Zooming Using Discrete Cosine Transform (DCT)	2007
36.	Mohit	Mathematical Morphology based Image Edge Detection	2007
37.	Parvinder Singh	Text Independent Speaker Verification System using Gaussian Mixture Model	2006
38.	SaruBajwa	Text Dependent Speaker Verification System Using Dynamic Time Warping	2006