

# Prof. Naveen Aggarwal

[navagg@pu.ac.in](mailto:navagg@pu.ac.in)  
[navagg@gmail.com](mailto:navagg@gmail.com)  
[navagg@ieee.org](mailto:navagg@ieee.org), [navagg@acm.org](mailto:navagg@acm.org)

University Institute of Engineering & Technology (UIET)  
Panjab University, Sector 25,  
Chandigarh-160014

3329, PEC Society,  
Sector 49-D  
Chandigarh-160047

## Academic Qualification

Standard	Year	Board/Univ	Remarks
B.E. (CSE.)	2000	Punjab Tech. Univ.	1 <sup>st</sup> in College, 3 <sup>rd</sup> in University. Bronze medallist
M.Tech (CSE)	2002	IIT Kharagpur	2nd in the IIT
Ph.D	2011	GGs Indraprastha University, Delhi	

## Work Experience

Institution	Designation	Year/Session	Class
UIET, Panjab University, Chandigarh	Professor	Oct 2018 to Till Date	B.E.(CSE) M.E (CSE)
UIET, Panjab University, Chandigarh	Assoc. Prof	Oct 2015 to Oct 2018	B.E.(CSE) M.E (CSE)
UIET, Panjab University. Chandigarh	Asstt. Prof,	Feb 2005 to Oct 2015	B.E.(CSE) M.E (CSE)
Punjab Engg. College, Chandigarh.	Lecturer	Feb 2002 to Feb2005	B.E. (CSE) M.E. (IT)

**Total Experience: 19 + years**

**Total Publications: 140+**

International Journals: 50+ (More than 30 SCI/SCIE Publications), International Book chapters: 19+,

International Conferences: 38, National Conferences: 30

**Books Published: 01 for GATE Entrance Exam Preparation by CENGAGE Publishers**

**Patent Published: 04**

**ME Students Guided: 40+, PhD Students Completed: 04**

**Reviewer Panel of Elsevier Pattern Recognition Letters, Elsevier Applied Acoustics and more than 6 Journals.**

## Professional Membership

- **Senior Member IEEE** (Membership No: **92663937**)
- **Senior Member ACM** (Membership No: **9053448**)
- IIT Kharagpur, Lifetime Alumni Membership
- ISB CEE Alumni Membership
- Life Member of HEMSI
- Life Member of Computer Society of India & Life Member of CSTA
- Senior Member IJCSITA
- Senior Member of International Association of Computer Science and Information Technology

<b>Projects</b>					
<b>S.No</b>	<b>Name of Project</b>	<b>Sponsoring Agency</b>	<b>Duration (Period)</b>	<b>Role</b>	<b>Amount Sanctioned</b>
1.	Cyber Security- Challenges under Cyber Space Specially for Women users –Investigating Cyber Initiated Crime against Women Users in Punjab State	National Commission of Women, Delhi	1 year (2020-2021)	Co-Investigator	Rs 14.04 Lacs
2.	Landslide Forewarning System for Manikaran, Himachal Pradesh	DST	3 years (2020-2022)	Co-Investigator	Rs 56 Lacs
3.	Rootworkz learning Platform	PSCS& T (DST)	1 Year (2020-2021)	Principal Investigator	Rs 50,000
4.	Design and Development of Recruitment Portal	4 Technozone Solutions Pvt. Ltd.	2021	Consultant	Rs 65000/-
5.	Development of Website for BG Unified Solutions	BG Unified Solutions Pvt . Ltd.	2021	Consultant	Rs 1.25 lacs
6.	Development of Quadcopter with thermal camera in Compliance with DGCA Guidelines	Space Jam Technologies	1 year 2020-2021	Consultant	Rs 2 lacs
7.	Design Innovation Centre: Subtheme: Traffic Sensing & Information Technologies	MHRD	5 Years 2015-2020	Principal Investigator	Rs 10 Crores for full project
8.	CARTS: Communication Assisted Road Transport System	ITRA, Media Lab Asia (DEITY)	5 Years (2013-2018)	Principal Investigator	Total=1.28 Crores (RS 12.6 lacs for UIET)
9.	Armor Wire Tester	Oceaneering Pvt. Ltd.	2016	Joint Investigator	7 Lacs +
10.	A tool based Effort Estimation Model	Infosys Technologies Ltd.	2006	Principal Investigator	1 Lacs
11.	SMS Based Result Information System	Panjab University	2007	Principal Designer	10000
12.	Speaker Recognition and Identification for VoIP	MHRD under TEQIP-II	2013-2014	Principle Investigator	1.20 lacs
13.	Subjective Assessment of Video quality for validation of objective metrics	MHRD under TEQIP-II	2013-2014	Principle Investigator	1.33 lacs

14.	TEQIP-II Implementation in various institutes at Chandigarh	World Bank through MHRD	Three Years 2012-2015	Consultant at State Project Facilitation Unit.
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### **Industrial projects Completed**

1. Effort Estimation Model developed for Axede Corp USA in 2008.
2. Content Management System development for Infosys Technologies Ltd (Patents obtained by Infosys technologies Ltd.) in 2006.
3. Cost Effort Estimation tool for Birlasoft technologies. (Patent obtained by Birlasoft technologies) in 2008-09.
4. "Intelligent Keyword Extraction System in 2018 for IDS Infotech Limited.

### **Selected Publication in SCOPUS /SCI Indexed Journals (Last Five Years only)**

1. "Video Inter-frame Forgery Detection: A Survey", published in Indian Journal of Science and Technology, Vol 9(44), November 2016, ISSN (Print): 0974-6846, ISSN (Online): 0974-5645, DOI: 10.17485/ijst/2016/v9i44/105142. (Scopus, Thomson Reuters "Web of Science" Indexed)
2. Detection of upscale-crop and splicing for digital video authentication, Digital Investigation (SCI Indexed), Elsevier, Vol. 21, pp. 31-52, June 2017. ISSN 1742-2876,
3. "Video content authentication techniques: a comprehensive survey", Springer Multimedia Systems, March 2018, Volume 24, Issue 2, pp 211–240 (SCI Indexed), ISSN="1432-1882", doi="10.1007/s00530-017-0538-9", url="http://dx.doi.org/10.1007/s00530-017-0538-9, 2017.
4. "Optical Flow and Prediction Residual Based Hybrid Forensic System for Inter-Frame Tampering Detection." Journal of Circuits, Systems and Computers, World Scientific, Vol. 26, No.7, July 2017 (SCIE Indexed) (2017): 1750107. Print ISSN: 0218-1266, Online ISSN: 1793-6454.
5. "Traffic state detection using smartphone based acoustic sensing", Journal of Intelligent & Fuzzy Systems (SCIE Indexed) Impact Factor 1.004, vol. 32, no. 4, pp. 3159-3166, March 2017, DOI: 10.3233/JIFS-169259, ISSN 1064-1246 (P), ISSN 1875-8967 (E)
6. "A review of task scheduling based on meta-heuristics approach in cloud computing", Springer International Journal, Knowledge and Information Systems (SCIE Indexed), Vol 51, issue 1, April 2017, ISSN 0219-1377 (P), ISSN 0219-3116 (E), DOI10.1007/s10115-017-1044-2, PP 1-51, 2017, Impact Factor 1.726
7. "Inter-Frame Forgery Detection Approach for Surveillance and Mobile Recorded Videos", International Journal of Electrical and Computer Engineering (IJECE), Vol. 7, No. 2, April 2017, pp. 831~841, ISSN: 2088-8708, DOI: 10.11591/ijece.v7i2.pp831-841. (Scopus Indexed).
8. "Inter-frame forgery detection in H.264 videos using motion and brightness gradients", Springer, Multimedia Tools and Applications, December 2017, Volume 76, Issue 24, pp 25767–25786, Print ISSN:1380-7501,Online ISSN: 1573-7721 DOI:10.1007/s11042-017-4762-2, PP:1-20, Impact Factor : 1.331(SCIE Indexed) (2017).
9. "Smart patrolling: An efficient road surface monitoring using smartphone sensors and crowdsourcing, Pervasive and Mobile Computing", Volume 40, September 2017, Pages 71-88, ISSN 1574-1192, (Impact Factor 2.34) (Scopus, SCIE, Thomson Reuters "Web of Science" Indexed)
10. " Detection and localization of copy-paste forgeries in digital videos", In Forensic Science International, Elsevier Volume 281, 2017, Pages 75-91, ISSN 0379-0738, <https://doi.org/10.1016/j.forsciint.2017.10.028>. (SCI Indexed)
11. "CrowdLoc: Cellular Fingerprinting for Crowds by Crowds". ACM Transaction on Sensor Networks. (SCIE Indexed) 14, 1, Article 4 (January 2018), 36 pages. DOI: <https://doi.org/10.1145/3155326>, ISSN:1550-4859 EISSN:1550-4867

12. "Smartphone based traffic state detection using acoustic analysis and crowdsourcing", Applied Acoustics, Volume 138, September 2018, Pages 80-91, ISSN 0003-682X, <https://doi.org/10.1016/j.apacoust.2018.03.029>. (Impact Factor 1.92) (SCIE Indexed)
13. "An efficient approach for secure information retrieval on cloud", Journal of Intelligent & Fuzzy Systems(SCIE Indexed) Impact Factor 1.004, vol. 34, no. 3, pp. 1345-1353, 2018, ISSN 1064-1246 (P), ISSN 1875-8967 (E) DOI: 10.3233/JIFS-169430.
14. "An Obstacle Detection Method for Visually Impaired Persons by Ground Plane Removal Using Speeded-Up Robust Features and Gray Level Co-Occurrence Matrix", Pattern Recognition and Image Analysis, 2018, Vol. 28, No. 2, pp. 288–300, ISSN 1054-6618, DOI: 10.1134/S1054661818020086 (SCOPUS Indexed)
15. "Improved TOPSIS method for peak frame selection in audio-video human emotion recognition", Springer, Multimedia Tools and Applications, July 2018, Volume , Issue , pp 1-32, Print ISSN:1380-7501,Online ISSN: 1573-7721, DOI: 10.1007/s11042-018-6402-x, Impact Factor : 1.331(SCIE Indexed) (2018).
16. "Non-destructive Evaluation and Development of a New Wire Rope Tester Using Parallely Magnetized NdFeB Magnet Segments", Springer Journal of Nondestructive Evaluation, Volume:37, Issue: 3, ISSN: 0195-9298, DOI: 10.1007/s10921-018-0516-y, 2018, Impact Factor : 1.690, (SCI Indexed).
17. "Keyword Binning-Based Efficient Search on Encrypted Cloud Data", in Springer Arabian Journal for Science and Engineering, issn=2191-4281",doi="10.1007/s13369-018-3580-9", 12 September 2018, (SCIE Indexed).
18. "Document clustering for efficient and secure information retrieval from cloud" in Wiley International Journal of Concurrency Computation Practice and experience. 2019; e5127. <https://doi.org/10.1002/cpe.5127>, ISSN: 15320626 Online ISSN:1532-0634, Impact Factor: 1.114, (SCIE Indexed), December 2018.
19. Searchable Encryption: A Survey on Privacy-Preserving Search Schemes on Encrypted Outsourced Data" in Wiley International Journal of Concurrency Computation Practice and Experience. 2019; ISSN: 15320626 Online ISSN:1532-0634, Impact Factor: 1.114, (SCIE Indexed), January 2019.
20. "Convolutional neural networks based potholes detection using thermal imaging", Journal of King Saud University - Computer and Information Sciences, 2019, ISSN 1319-1578, <https://doi.org/10.1016/j.jksuci.2019.02.004>.
21. A distortion-agnostic video quality metric based on multi-scale spatio-temporal structural information, Elsevier Signal Processing: Image Communication, Volume 74, 2019, Pages 299-308, ISSN 0923-5965,2019, ISSN 0923-5965, <https://doi.org/10.1016/j.image.2019.02.010> (SCI Indexed) (Impact factor 2.073)
22. Anuj Dimri, Harsimran Singh, Naveen Aggarwal, Bhaskaran Raman, K. K. Ramakrishnan, and Divya Bansal. 2019. BaroSense: Using Barometer for Road Traffic Congestion Detection and Path Estimation with Crowdsourcing. ACM Transaction on Sensor Networks, 16, 1, Article 4 (November 2019), 24 pages. DOI: <https://doi.org/10.1145/3364697>.
23. Handa, Rohit, C. Rama Krishna, and Naveen Aggarwal. "Efficient privacy-preserving scheme supporting disjunctive multi-keyword search with ranking." Concurrency and Computation: Practice and Experience Vol 32, Issue 2, ISSN: 15320626 Online ISSN:1532-0634, Impact Factor: 1.1167, (SCIE Indexed), July 2019.
24. Singh, R., Puri, H., Aggarwal, N. et al. An Efficient Language-Independent Acoustic Emotion Classification System. Springer Arab J Sci Eng, 45, 3111–3121 (2020) doi:10.1007/s13369-019-04293-9, issn=2191-4281, Impact Factor: 1.518, (SCIE Indexed).
25. Singh, Gurprem, Ajay Mittal, and Naveen Aggarwal. "ResDNN: Deep Residual Learning for Natural Image Denoising." IET Image Processing (2020).
26. S. Kaur, K. Kumar and N. Aggarwal, "Security Threats On Data-Control Plane Communication Channel in SDN", Advances in Mathematics: Scientific Journal 9 (2020), no.6, 4031–4038, ISSN: 1857-8365 (printed); 1857-8438 (electronic) (SCOPUS Indexed).
27. Dinesh Vij, Naveen Aggarwal. Transportation Mode Detection Using Cumulative Acoustic Sensing and Analysis, Springer, Frontier of Computer Science., Vol:15, Issue: 1,November 2020, Electronic

ISSN:2095-2236, Print ISSN: 2095-2228. doi: 10.1007/s11704-019-9200-3, (SCIE Indexed), Impact Factor=1.387.

28. Singh, R.D., Aggarwal, N. Optical flow and pattern noise-based copy–paste detection in digital videos. *Multimedia Systems* (2021). <https://doi.org/10.1007/s00530-020-00749-3> Electronic ISSN: 1432-1882, Print ISSN:0942-4962, Impact Factor=1.7 (SCI Indexed).
29. Kaur, Sukhveer, Krishan Kumar, and Naveen Aggarwal. "A review on P4-Programmable data planes: Architecture, research efforts, and future directions." *Computer Communications* (2021).

### Book Chapters (Last 5 Years)

1. Ranjeet Singh, Naveen Aggarwal, “Recent Trends and Developments for Standardization of Video Quality Assessment Metrics” published in **SPRINGER Book** New Trends in Networking, Computing, E-learning, Systems Sciences, and Engineering, Lecture Notes in Electrical Engineering, Vol 312, Paper Chapter 58, ISBN NO: 978-3-319-06764-3
2. Singh, Raahat Devender, and Naveen Aggarwal. "Novel Research in the Field of Shot Boundary Detection–A Survey." *Advances in Intelligent Informatics*. Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 320) , Springer International Publishing, 2015. 457-469. Available at [https://link.springer.com/chapter/10.1007/978-3-319-11218-3\\_41](https://link.springer.com/chapter/10.1007/978-3-319-11218-3_41), [https://doi.org/10.1007/978-3-319-11218-3\\_41](https://doi.org/10.1007/978-3-319-11218-3_41)
3. Goyal, Neetu, Naveen Aggarwal, and Maitreyee Dutta. "A Novel Way of Assigning Software Bug Priority Using Supervised Classification on Clustered Bugs Data." *Advances in Intelligent Informatics*. Part of the Advances in Intelligent Systems and Computing book series (AISC, volume 320), Springer International Publishing, 2015. 493-501.
4. Poonam, Maitrayee Dutta, Naveen Aggarwal, “Meta-Heuristics Based Approach for Workflow Scheduling in Cloud Computing: A Survey”, Artificial Intelligence and Evolutionary Computations in Engineering Systems by Springer, Vol 394, pp 1331-1345, in series Advances in Intelligent Systems and Computing, ISBN: 978-81-322-2654-3, Chapter DOI 10.1007/978-81-322-2656-7\_121, February 2016.
5. Kaur A., Aggarwal, Naveen, et al. (2018) Selection of a Hall Sensor for Usage in a Wire Rope Tester. In: Nandi A., Sujatha N., Menaka R., Alex J. (eds) Computational Signal Processing and Analysis. Lecture Notes in Electrical Engineering, vol 490, pp: 361-371, ISBN 978-981-10-8353-2 ISBN 978-981-10-8354-9 (eBook), <https://doi.org/10.1007/978-981-10-8354-9> Springer, Singapore
6. Angmo R., Mangat V., Naveen Aggarwal , “Preserving User Location Privacy in Era of Location-Based Services: Challenges, Techniques and Framework”. Proceedings of 2nd International Conference on Communication, Computing and Networking. Lecture Notes in Networks and Systems, vol 46. Springer, Print ISBN: 978-981-13-1216-8, Online ISBN:978-981-13-1217-5, September 2018
7. Kaur M., Singh S., Aggarwal N. “Study of NoSQL Databases for Storing and Analyzing Traffic Data”. In: Proceedings of 2nd International Conference on Communication, Computing and Networking. Lecture Notes in Networks and Systems, vol 46. Springer, , Print ISBN: 978-981-13-1216-8, Online ISBN:978-981-13-1217-5, September 2018
8. Bansal N., Akashdeep, Aggarwal N., “ Deep Learning Based Shadow Detection in Images”,. In: Proceedings of 2nd International Conference on Communication, Computing and Networking. Lecture Notes in Networks and Systems, vol 46. Springer, Print ISBN: 978-981-13-1216-8, Online ISBN:978-981-13-1217-5, September 2018
9. Singh L., Singh S., Aggarwal N., “Two-Stage Text Feature Selection Method for Human Emotion Recognition”, In: Proceedings of 2nd International Conference on Communication, Computing and Networking. Lecture Notes in Networks and Systems, vol 46. Springer, Print ISBN: 978-981-13-1216-8, Online ISBN:978-981-13-1217-5, September 2018.
10. Sukhija, K., Jindal, M., Aggarwal, N., “EDARC: Collaborative Frequent Pattern and Analytical Mining Tool for Exploration of Educational Information”, In Recent Findings in Intelligent Computing Techniques, Chapter No 26, Springer ISBN: 978-981-10-8632-8, November 2018.
11. Singh V.P., Aggarwal N., Hussain M., Raina C.K. “A New Approach to Provide Authentication Using Acknowledgment”, In Progress in Advanced Computing and Intelligent Engineering. Advances in

Intelligent Systems and Computing, vol 713. Springer, Singapore, 2018. Print ISBN 978-981-13-1707-1, Online ISBN 978-981-13-1708-8

12. Bansal, A., Aggarwal, N., Vij, D., Sharma, A. "An off the shelf CNN features based approach for vehicle classification using acoustics" in Lecture Notes in Computational Vision and Biomechanics, 30, pp. 1163-1170. DOI: 10.1007/978-3-030-00665-5\_11, 2019, ISBN 978-3-030-00664-8.
13. Lavisha Garg, Akashdeep, Naveen Aggarwal, "A Hybrid Feature Reduced approach for Intrusion Detection System", in a book Computer and Network Sustainability, Lecture Notes in Networks and Systems, by Springer 2019, eBook ISBN: 978-981-13-7150-9 Hardcover ISBN: 978-981-13-7149-3
14. Singh, G. Mittal, A., Aggarwal, N., "Deep Convolution Neural Network Based Denoiser for Mammographic Images" in Advances in Computing and Data Sciences, Springer 2019, eBook ISBN: 978-981-13-9939-8, Softcover ISBN 978-981-13-9938-1.
15. Kumar, Saroj, Parminder Singh, Shankar Sehgal, Harmesh Kumar, Naveen Aggarwal, Sarbjeet Singh, and Deepam Goyal. "Application of industrial internet of things for online monitoring of bearings." In Recent Advances in Mechanical Engineering, pp. 333-342. Springer, Singapore, 2020.
16. Singh I., Singh V.P., Aggarwal N. (2020) Comparative Study on Punjabi Document Clustering. In: Bansal J., Gupta M., Sharma H., Agarwal B. (eds) Communication and Intelligent Systems. ICCIS 2019. Lecture Notes in Networks and Systems, vol 120. Springer, Singapore.
17. Angmo R., Mangat V., Aggarwal N. A Study of Efficient Methods for Selecting Quasi-identifier for Privacy-Preserving Data Mining. In Computational Methods and Data Engineering. Advances in Intelligent Systems and Computing, vol 1227. Springer, Singapore. [https://doi.org/10.1007/978-981-15-6876-3\\_24](https://doi.org/10.1007/978-981-15-6876-3_24), August 2020, Print ISBN: 978-981-15-6875-6, Online ISBN: 978-981-15-6876-3

#### **Awards & Honors:**

- Mentor of Award Winning Startup "RootWorkz Learning", selected as winner of Eureka 2020-21 by IIT Bombay with prize of Rs 2.5L.
- Winner of NDIN Innovation Challenge for COVID-19 by INDIAN Innovation Challenge for COVID-19 Indian Institute of Science, Bangalore.
- Top Downloaded Paper Award by Wiley International Pvt Ltd. For Year 2018-19
- Appreciated by Punjab School Education Board, Mohali for development of Data Mining and Analytics Software.
- **Procurement coordinator and consultant** at State Project Facilitation Unit of UT Chandigarh for TEQIP-II project being implemented in Technical institutes of Chandigarh (Total Amount = Rs 30 Crore). From Feb 2012 to Jan 2014.
- **Outstanding Faculty Contributor** award by Infosys Technologies Pvt. Ltd.
- Successfully Completed a Sabbatical project "**Tool based Estimation Model Development**" at Infosys Chandigarh in August 2006.
- Imparted training to more than 1000 personnel to use Electronic Voting machines during 2004 Lok Sabha Elections of Govt of India.
- CMS Effort Estimation Model is developed in collaboration with BirlaSoft Corp., India
- Appreciation letter from Dr. M.P. Ravindra, Vice President and head Education and Research Deptt, Infosys Technologies Ltd. for Sabbatical project undertaken at Infosys technologies.
- Appreciation Letter from CEO, AXEDE Corp, USA for developing CMS Effort Estimation Model for their organization.
- Awarded Rs 10,000/- by Prof. R.C. Sobti to develop SMS based attendance management system in UIET.
- Awarded Bronze medal for standing third in graduation by Punjab Technical University.

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#### **Other Achievements:**

- **Organizing Secretary** of 3<sup>rd</sup> **International conference** on Biomedical Engineering and Assistive Technologies (BEATS-2014), February 14-15, 2014.
- Consultant and Nodal Officer for Procurement, Finance and Management in State Project Facilitation Unit, UT Chandigarh for TEQIP-II.
- NBA Core team member to implement NBA regulations in UIET and prepared NBA proposal for UIET.



- Awarded Rs 25,000/- for Best Paper Prize for Paper “Automatic triggering of Acoustic Sensing by Human Activity Recognition using the Accelerometer” in ACM Compute 2018.
- Joint Admission Committee Member to organize BE Admissions during session 2013-14, 2017-18, 2018-19.
- Delivered More than 50 Expert lectures at Various Forums / Refresher Courses / FDP / Short term courses / Workshops.
- Setup two Design Innovation Centre Labs (Sensor Lab and Computer Vision Lab) in CSE Department
- Setup PU DATA set Server (pudataset.puchd.ac.in) to provide Storage as a Service (SaaS) for online management and dissemination of the data collected by various departments using DSPACE Server solution.
- Setup servers to provide Infrastructure as a Service (IaaS) by providing virtual machines on Cloud.
- Technical Committee Member of IEEE International conference on Recent Advances in Engineering and Computational Sciences, organized by Panjab University on 6-8 March 2013 and in December 2016.
- Technical Committee Member of more than 80 International conferences such as ICIIP-2013, 2014, Confluence, 2014-2018, ICCTD 2011 etc.
- Assisted PEC, Chandigarh, IT Department to get ISO 9001 certification in 2003.
- Technical program Committee Member of Int Journal of Computing and Digital Systems.
- Awarded Best Paper Prize for paper “**Analysis of Lung Segmentation and Boundary Correction Techniques on Lung CT Image**” in CHASCON 2012.
- Awarded Best Paper Prize for paper “**Real Time Human Activity Recognition Using Shape-from-Motion Reconstruction**” in CHASCON 2008.
- Attended more than 30 different Workshops / STC / Seminars / Symposium / Conferences.

#### **Courses / Workshops Attended**

<b>S.N.</b>	<b>Program</b>	<b>Duration</b>	<b>Organized by</b>
1.	Building Basic Generative Adversarial Networks	Online Course 4 Weeks October 2020	Coursera , Deeplearning. AI
2.	Deep Learning Specialization	Online Course 4 Weeks July 2020	Coursera , Deeplearning. AI
3.	Sequence Models	Online Course 4 Weeks June-July 2020	Coursera , Deeplearning. AI
4.	Structuring Machine Learning Projects	Online Course 4 Weeks May- June 2020	Coursera , Deeplearning. AI
5.	Improving Deep Neural Networks: Hyper parameter Tuning, Regularization and Optimization	Online Course 4 Weeks April- May 2020	Coursera , Deeplearning. AI
6.	Convolutional Neural Networks	Online Course 4 Weeks April 2020	Coursera , Deeplearning. AI
7.	Neural Networks and Deep Learning	Online Course 4 Weeks March 2020	Coursera , Deeplearning. AI
8.	End to End Machine Learning with TensorFlow on Google Cloud Platform	Online Course 4 Weeks February 2019	Coursera , Deeplearning. AI
9.	Creativity Boot camp	Jan 16 2019	Linkedin Learning
10.	Leadership Skills for Top Management	20-24 February 2017	ISB Hyderabad
11.	Faculty Enablement program for Foundation Program 5.0 (Python)	14-16 December 2016	Infosys Pvt. Ltd.

12.	Image processing and Machine Learning for Pattern Recognition	One week, 11-16 July 2016	UIET, Panjab University under TEQIP-II
13.	Data Analytics and Big Data	One week, 23-28 May 2016	UIET, Panjab University under TEQIP-II
14.	R programming	Online Course 4 Weeks July 2015	John Hopkins University
15.	Data Scientist Course	Online Course 4 Weeks June 8, 2015	John Hopkins University
16.	QEEE Workshop on Pedagogical Skills	12 June to 7 August 2014 (Online Workshop)	IIT Bombay
17.	NBA Workshop on Quality Initiatives in Technical and Higher Educational Institutions/	21-23 March 2014	Engineering Staff College of India, Hyderabad.
18.	UGC Sponsored One Day Seminar on Active Noise Control and its Applications	20 March 2014.	Panjab University
19.	Workshop on Business Intelligence & Cloud Computing	9 January 2013.	TCS pvt Ltd.
20.	MATLAB Workshop	18 July 2012	MathWorks Corp. India Ltd.
21.	Refresher Course	3 Weeks June 15, 2012 to July 05, 2012	Academic Staff College, Panjab University
22.	Workshop on Business Analytics	24 February 2012	Infosys Corp Pvt. Ltd. Chandigarh
23.	Workshop on Business Computing	20-24 June 2011	Infosys Corp. Pvt Ltd, Chandigarh
24.	Workshop on IPR	16- 17 Feb 2009.	IPR cell of Panjab University
25.	Microsoft .NET Faculty Workshop	30 Jan 2009 to 2 <sup>nd</sup> Feb 2009	Microsoft
26.	Online Workshop on Voice over IP	February 2008	IBM India
27.	Refresher Course	3 Weeks September 10, 2008 to September 30, 2008	Academic Staff College, Panjab University
28.	Workshop on Virtual Private Network	September 2007	Infosys Pvt. Ltd, IT Park, Chandigarh
29.	Orientation course	4 Weeks December 1, 2006 to December 28, 2006	Academic Staff College, Panjab University
30.	iSync Workshop	25 - 26 August 2006	PEC University of Technology, Chandigarh
31.	Faculty Enablement Program	Two Weeks, 3-16 June, 2006	Infosys Corp. Pvt. Ltd. Pune, India
32.	Agile Development in Business model	August 2005	Oracle India



33.	Train the Trainer: A Confluence of Industry and Academia	Duration 36 hours, equivalent to one week, 28-30 September 2005	Infosys Corp. Pvt. Ltd. Mohali, India
34.	Short Term Training Program on Windows NT	One Week 6 Dec 2004 to 10 Dec 2004	NITTTR, Chandigarh

### **Participation in International /National /Regional Seminars**

- Participated in AWS Innovate summit in May 13, 2020
- Participated in AWS Innovate in Feb 19, 2020.
- Participated in Google Cloud on Board, 5 September 2019.
- Participated in AWS Quick start in March 2019.
- Participated in Google Cloud on Board, 28 March 2019.
- Participated in All India DIC Meetup at IIT-BHU, Varanasi from 9-10 February 2018.
- Participated in Design Innovation Contest under Design Innovation Centre at UIET, Panjab University from 18-19 September 2017
- Participated in ITRA-Mobile workshop organized by ITRA, Media Lab Asia at IIM Kolkata from 13-14 July 2017.
- Attended and Participated in 11<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 9 March to 11 March 2017.
- Program committee member of Wireless Networks in Control Systems 2014 (WNCS 2014) to be held in Dubai, 7-9 Nov 2014.
- Organizing Secretary of 3rd International conference on Biomedical Engineering and Assistive Technologies (BEATS-2014), February 14-15, 2014.
- Technical Committee Member of Confluence 2014, IEEE International Conference “The next generation Information Technology Summit” organized in AMITY University on 25-26 Sep 2014.
- Technical Committee Member of IEEE International conference on Recent Advances in Engineering and Computational Sciences, organized by Panjab University on 6-8 March 2013.
- Chaired a Session in IEEE International conference on Recent Advances in Engineering and Computational Sciences, organized by Panjab University on 6-8 March 2013.
- Attended & organized the live proceedings of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering by IEEE CISSE from 12-14 December 2013 at UIET, Panjab University, Chandigarh.
- Technical program Committee Member of Int Journal of Computing and Digital Systems.
- Technical Committee Member of IEEE Second International Conference on Image Information Processing (ICIIP-2013), Organized by Jaypee University, Wankhaskar, December 9 - 11, 2013
- Technical Committee Member of Confluence 2013, An International Conference “The next generation Information Technology Summit” organized in AMITY University on 27-29 Sep 2013.
- Attended the 7th Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 1-3 March 2013.
- Member of Reviewer Committee for IEEE Symposium on Industrial Electronics and Applications (ISIEA 2012 held in Indonesia 23-26 Sep 2012).
- Technical Committee Member of 2011 3rd International Conference on Computer Technology and Development (ICCTD 2011) www.icctd.org Chengdu, China. November 25-27, 2011.
- Attended “National Conclave on Science and Technologies in INDIA: Opportunities and Challenges at Panjab University, Chandigarh from 15-16 September 2011.
- Attended a Symposium on Image Processing Analysis and Clinical Applications organized at UIET, Panjab University, Chandigarh from 16-17 July 2010.
- Member of local organizing committee and Editorial board for National conference on Computing, Communication, Control, CCC-09 held on 23-24 October 2009 at UIET, Panjab University, Chandigarh.

- Attended the National conference on Computing, Communication, Control, CCC-09 held on 23-24 October 2009 at UIET, Panjab University, Chandigarh.
- Attended & organized the live proceedings using Video Conferencing of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering by IEEE CISSE at UIET, Panjab University, Chandigarh from 5-13 December 2008.
- Attended a Seminar on “Advances in Frontier Technologies” at UIET, Panjab University, Chandigarh, on 27 March 2008.
- Attended ACM Compute 2008 on Innovative Technologies in January 2008.
- Attended the webinar organized by Infosys on Voice over IP in February 2008.
- Attended the seminar organized by Adobe systems on Adobe Photoshop-Latest Innovation in October 2008.
- Attended the Seminar on Latest Trends in Software organized by Infosys in February 2007
- Attended & organized the live proceedings of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering by IEEE CISSE at UIET, Panjab University, Chandigarh from 3-12 December 2007.
- Attended the webinar organized by Infosys among more than 100 participant colleges on Web Technologies in March 2007
- Attended the conference by IET on Visual Information Engineering in September 2006
- Attended the IEEE TENCON Conference on Innovative technologies for societal Change in November 2006.
- Attended the seminar organized by IBM on Agile Technologies in August 2005.
- Honored by Center for International Trade & Industry (CITI) for presenting and organizing Seminar on Role of IT in Business for in Feb 2004.
- Attended and Organized the National Symposium on Emerging trends in Networking and Mobile communications by IETE in Punjab Engineering College in September 2003.

#### **Workshops / Conferences / FDP Organized**

1. Jury member in Internal hackathon from Smart India Hackathon organized at UIET, January 2020.
2. Faculty mentor in Four week training under student exchange program of GCET Jammu from 11 July to 10 August 2019.
3. Organized “Degree Award Ceremony in UIET, Panjab University on May 25, 2019.
4. Organized a two-week course on “Data privacy and Security” at UIET, Panjab university, Chandigarh from 5<sup>th</sup> March-14<sup>th</sup> March 2018.
5. Organized a one-day workshop on “One M2M” along with Telecommunication Development Society India (TSDSI) at UIET, Panjab University, Chandigarh on 19<sup>th</sup> February 2018.
6. Member of Organizing Committee in organizing 12<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 12<sup>th</sup> February to 14<sup>th</sup> February 2018.
7. Organized a two-week course on “Big Data and Analytics” at UIET, Panjab university, Chandigarh from 8<sup>th</sup> -21<sup>st</sup> January 2018.
8. Organizing secretary for one-day workshop on Android App Development at DIC, Panjab University, Chandigarh on 11<sup>th</sup> November 2017.
9. Organized a two-day workshop on “Controllers and their use in IOT” at DIC, Panjab University, Chandigarh on 7-8<sup>th</sup> November 2017.
10. Organized a one-day lecture of Sh. Vivek Atray in collaboration with Kaivalya Education Trust on 24<sup>th</sup> October 2017.
11. Organized a Design Innovation Contest under Design Innovation Centre at UIET, Panjab University from 18-19 September 2017.
12. Organized a two-day workshop on Big Data at DIC, Panjab University, Chandigarh from 2-3 September 2017.
13. Organized a special Elective Course on “Data Mining” for Post Graduate students under Minor Specialization Course Category from January 2017 to May 2017.

14. Organized a One-day workshop on “Internet of Things” at DIC, Panjab University, Chandigarh on 17<sup>th</sup> April 2017.
15. Member of Scientific Committee in organizing 11<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 9 March to 11 March 2017.
16. Organized a Quiz during 11<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 9 March to 11 March 2017.
17. Organized a 3-week Advance course on Image processing and Computer Vision at DIC, Panjab University, Chandigarh from 18 February to 11 March 2017.
18. Organized a two-day workshop on Chandigarh Urban observatory at DIC, Chandigarh on 17-18 January 2017.
19. Organizing Secretary for organizing Interaction Workshop of IISc Bangalore and UT Administration Officials on 10<sup>th</sup> October 2016.
20. Organized a one-week Faculty Development Program on Image processing and Machine Learning for Pattern Recognition at UIET, Panjab University under TEQIP-II from 11-16 July 2016.
21. Organized a series of Android Classes in UIET, Panjab University from 1<sup>st</sup> to 30<sup>th</sup> April 2016.
22. Organized a special lecture on Oracle Certification Course in UIET, Panjab University on 16<sup>th</sup> Feb 2016.
23. Member of organizing committee of 10<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 29 February to 2 March 2016.
24. Organized a series of special lecture on Python, Linux and Android, in UIET, Panjab University on 11<sup>th</sup>, 12<sup>th</sup> and 15<sup>th</sup> Feb 2016.
25. Organized a series of technical events on “Core Java” in UIET, Panjab University from 10<sup>th</sup> February 2016.
26. Organized a series of technical events on “Website Development” in UIET, Panjab University from 4<sup>th</sup> February 2016.
27. Organized a series of technical events on “Introduction and Basics of Linux” in UIET, Panjab University from 2<sup>nd</sup> November 2015 to 6<sup>th</sup> November 2015.
28. Organized a series of technical events on “Linux System Administration” in UIET, Panjab University from 15<sup>th</sup> October 2015 to 3<sup>rd</sup> November 2015.
29. Organized a workshop on Robotics and Web Designing at UIET, Panjab University under the aegis of National Academy of Sciences on 28<sup>th</sup> March 2015.
30. Organized a Quiz during 9<sup>th</sup> Chandigarh Science Congress (CHASCON) organized at Panjab University, Chandigarh from 26 February to 28 February 2015.
31. Organized a webinar series for Infosys on Big Data Technologies on 6<sup>th</sup> Feb 2015 (Introduction to Big Data), 15<sup>th</sup> Feb 2015 (Introduction to Hadoop) and (Advanced /Latest Developments in Hadoop) 20<sup>th</sup> Feb 2015.
32. Organized a UGC Sponsored National Level Seminar on Active Noise Control Workshop on 20 March 2014.
33. Organizing Secretary of 3<sup>rd</sup> International conference on Biomedical Engineering and Assistive Technologies (BEATS-2014), February 14-15, 2014.
34. Technical Committee Member and Organizing Member of IEEE International conference on Recent Advances in Engineering and Computational Sciences, organized by Panjab University on 6-8 March 2013.
35. Organized a Procurement and PMSS Training workshop as a consultant for State project facilitation Unit, UT Administration Chandigarh in collaboration with NPIU, on 15<sup>th</sup> March 2012.
36. Coordinator of TEQIP Sponsored Two Week National Level Faculty Development Programme on “MATLAB Fundamentals and Neural Networks & Fuzzy Logic Toolboxes” from 3-14 December 2012 at UIET, Panjab University, Chandigarh.
37. Member of organizing committee in organizing a “CONCLAVE on SETU: Bridging Gap between Industry and Academia at Panjab University, Chandigarh from 8-9 November 2012.
38. Coordinator of Infosys Sponsored One-day workshop on Business Intelligence conducted on 24<sup>th</sup> February 2012 at UIET, Panjab University, Chandigarh.

39. Co-Coordinator of One-day workshop on MATLAB conducted on 18<sup>th</sup> July 2012, sponsored by TEQIP-II Program at Panjab University, Chandigarh.
40. Member of Judging Committee in Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 26-28 February 2012.
41. Sectional Secretary for organizing the Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 26-28 February 2012.
42. Organized a Techno-Cultural College Festival “GOONZ” at UIET, Panjab University, Chandigarh from 4-5 February 2012.
43. Member of organizing committee in organizing a “National Conclave on Science and Technologies in INDIA: Opportunities and Challenges at Panjab University, Chandigarh from 15-16 September 2011.
44. Organized and IEEE National Conference on Cognizance of Applied Engineering and Research (ICEAR-2011) at UIET, Panjab University, Chandigarh from 15<sup>th</sup> October 2011.
45. Organized a Workshop on “DreamWeaver 8 and Quiz” held at UIET, Panjab University, Chandigarh on 23 September 2011.
46. Sectional Secretary for organizing the Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 26-28 February 2011.
47. Member Website Committee in organizing the Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 26-28 February 2011.
48. Organizing Secretary for Symposium on Image Processing Analysis and Clinical Applications organized at UIET, Panjab University, Chandigarh from 16-17 July 2010.
49. Joint Sectional Secretary for organizing the Chandigarh Science Congress (CHASCON) at Panjab University, Chandigarh from 19-20 March 2010.
50. Member of local organizing committee and Editorial board for National conference on Computing, Communication, Control, CCC-09 held on 23-24 October 2009 at UIET, Panjab University, Chandigarh.
51. Successfully completed the second year of Sun Campus Ambassador program at UIET, Panjab University. Under this program 4 workshops and 4 tutorial program are conducted.
52. Organized a Faculty Workshop on Microsoft .Net technologies from 31 Jan to 2nd Feb 2009.
53. Organized a Workshop on IPR in UIET in Feb 2009.
54. Organized the various contests under Infosys Aspirations 2020 program at state level and national level.
55. Successfully Conducted Infosys Foundation Program for students of UIET, DCET and SSGPURC, Hoshiarpur during the session 2009-2010
56. Organized the live proceedings using Video Conferencing of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering by IEEE CISSE at UIET, Panjab University, Chandigarh from 5-13 December 2008.
57. Successfully Conducted Infosys Foundation Program for students of UIET, DCET and SSGPURC, Hoshiarpur during the session 2008-2009
58. Organized the live proceedings of the International Joint Conferences on Computer, Information, and Systems Sciences, and Engineering by IEEE CISSE at UIET, Panjab University, Chandigarh from 3-12 December 2007.
59. Member of Organizing committee for National conference on Emerging Trends in Wireless Communications and E-Security, organized at UIET, PU, Chandigarh from 11-12 January 2007.
60. Member of Organizing committee a National Symposium on Emerging Trends in Networking and Mobile Communications at Punjab Engineering College, Chandigarh from 5-6 September 2003.

#### **Technical Program Committee Member of Following Conferences (More than 80)**

HMIMIA 2019, MIND-2019, Confluence 2019, ICCAIS'19, ICACCI-2018, ISTA-2018, ICAIS-2018, ISI-2018, MobiApps 2018, ISSCPS2018, ICACIE 2018, ICCCN-2018, Compute2018, ICT4SD 2018, ICSICCS-2018, Confluence 2018, ICACDS 2018, ICACC-2017, ICACIE 2017, ICACNI 2017, Confluence 2017, 9th IEEE-GCC 2017, ICTCS 2017, ISI-2017, ISTA-2017, MobiApps 2017, 2017 Fourth IEEE ICIIP, ISTA-2016, RICSIT-2016, ICACDS-2016, RAECS-2015, ICDCN 2016, ICSCTI2015, Confluence 2016, GLOBAL TIE , ummit 2016, MobiApps 2016, DPNOC 2016, ISI-2016, APMediaCast2016, IEACON 2016, WoTBD 2016, ISTA-2016, ISTA-ICA'16, 3rd IEEE ICIIP 2015, ICAIECES -2015, MobiApps-2015, ICCCA2015, A-

LAZE-2015, ICDCIT 2015 – Students, APMediaCast 2015, eQeSS 2015, WoTBD 2015, DPNoc 2015, ISTA-015, ICAIS'15, MobiApps 2015, ICAIS'14, ICEPIT 2014, ISI-2014, WNCS 2014, Confluence 2014, BEATS, 2014, RAECS-2014, ISCAIE 2014, ISIEA 2014, ICACCI 2014 Doctoral Consortium, IAICT 2014, BIS'14, Confluence 2013, JETWI (ISSN 1798-0461), PreMI'13, ICAIS 2013, 2013 Second IEEE ICIP, , ISCI 2013, ISI2013- Mysore, WICT 2012, ACMCompute2008

### **Expert Lectures Delivered**

1. Expert Lecture on “Data Mining & various algorithmic techniques” during a Training Programme on Big Data Management & Comprehensive Analysis under the DST Scheme “National Programme For Training of Scientists & Technologists Working In Government Sector” through online mode on February 9, 2021.
2. Expert Lecture on “ITS for Smart Cities” On Engineer Day celebrations on 18th September 2020 at Guru Jambheshwar University, Hissar
3. Expert Lecture on “Intelligent Transportation System: Opportunities and Challenges” during Faulty Development Program on IoT and Smart cities held at Punjab Engineering College, Chandigarh on 20 April 2020.
4. Expert Lecture on “Text classifications” in TEQIP III sponsored five day STC on “Machine and Deep Learning in Computer Vision” at Dr. B.R. Ambedkar National Institute of Technology, Jalandhar, on 11 August 2019.
5. Expert Lecture on “Data Mining and Algorithmic approaches at CDAC during Training Programme on “Big Data Management & Comprehensive Analysis”under the Scheme “National Programme For Training Of Scientists & Technologists Working In Government Sector” at CDAC, Mohali campus on 12 February 2019.
6. Expert Lecture during panel discussion on “Architecture and Empathy Workshop” organized by Chandigarh College of Architecture on 11 Jan 2019.
7. Expert Lecture on “DSpace: Information Repository for institutes” on 11 January 2019 during a 5 day workshop on “Creation and Management of Digital Repositories using Open Source Software organized by AC Joshi Library and INFILIBNET Centre, Gandhinagar.
8. Expert Lecture on “Data Warehouse to Data Lakes”, Thapar Institute of Engineering and Technology, Patiala, on 10 September 2018.
9. Expert Lecture on “Big Data: Hope vs Hype”, Short term Course on Mathematics in Engineering (MIE) under TEQIP –III organized by Punjab Engineering College, Chandigarh 5th June 2018.
10. Expert Lecture on “Data Warehouses to Data Lakes”, Central University, Bathinda on 25 January 2018.
11. Expert Lecture on “Big Data Analytics”, UGC Refresher Course in Information Technology, Academic Staff College, Panjab University, Chandigarh on 17 Jan 2018
12. Expert Lecture on “Big Data: Hope vs Hype”, UGC Refresher Course in Professional practices, Academic Staff College, Panjab University, Chandigarh on 17 Jan 2018
13. Expert Lecture on “Forensics and Security” for Short Term Course on “Network Security and Firewall” at NITTTR Chandigarh on 16 January 2018
14. Expert Lecture on “Hands on Session on MS Word”, Refresher Course in Information Technology, Academic Staff College, Panjab University, Chandigarh on 15 Jan 2018 (AN).
15. Expert Lecture on “How to write Thesis in MS Word”, Refresher Course in Information Technology, Academic Staff College, Panjab University, Chandigarh on 15 Jan 2018 (FN).
16. Expert Lecture on “Data Analysis and Machine Learning using Weka”, Thapar Institute of Engineering and Technology, Patiala, on 6 November 2017.
17. Expert Lecture on “Big Data and Technology Aspects in Partnering Industry and Government”, Chandigarh Urban Observatory Workshop on 17-18 November 2016.
18. Expert Lecture on “R Language for Analytics” for Short Term Course on “Open Source Technologies Through ICT” at NITTTR Chandigarh on 1st Sep 2016.
19. Expert Lecture on “Introduction to CIM and Networking” at NITTTR Chandigarh on 27th Sep 2015
20. Expert Lecture on “MPEG Audio and Video Compression” in a short term course on Graphic Designing and Animation for Web on 15th May 2015 at NITTTR Chandigarh

21. Invited Talk on “Distributed File Systems for HPC” during Workshop on Parallel Computing using HPCC at Panjab University, Chandigarh on 17 March 2014.
22. Expert Lecture on “Image Compression and Algorithm” in a short term course on Multimedia Content Generation on 9th February 2015 at NITTTR Chandigarh.
23. Expert Lecture on “Multimedia compression” on 13 December 2014 and 20 December 2014 at NITTTR Chandigarh.
24. Expert Lecture on “Network Architecture and Protocols” at NITTTR Chandigarh on 27th Sep 2014.
25. Expert Lecture on “Image Segmentation and Clustering” in ISTE National Level Faculty Development Programme organized by IET Bhaddal Technical Campus on 17th Sep 2014.
26. Expert Lecture on “Stored Procedures, Functions and Triggers” in Faculty Development Program organized at Rayat and Behra Institute of Engg & Technology, Mohali on 22nd July 2014.
27. Expert Lecture on “Digital Surveillance” during Workshop on ‘Digital Eye-Real Time Border Surveillance’ organized by BSF, Ministry of Home Affairs on 27 June 2014.
28. Expert Lecture on “Enterprise Integration using Computer Networking” at NITTTR Chandigarh on 5th July 2014.
29. Expert Lecture on “JPEG Image Compression” organized by Chandigarh University, Gharuan on 27 March 2014.
30. Expert Lecture on “Data Mining tools” at NITTTR Chandigarh on 27th December 2013.
31. Expert Talk on “Requirement Specification and Analysis” Through EDUSAT organized by DTE, Punjab on 10 October 2013.
32. Expert Talk on “Open source Technologies- Data Mining Tools” organized by NITTTR Chandigarh on 4 September 2013.
33. Expert Talk on “Multimedia Compression Techniques” organized by Chandigarh University, Gharuan on 30 March 2013.
34. Invited Talk on “High performance Data Mining” during Workshop on Parallel Computing using HPCC at Panjab University, Chandigarh on 21 March 2013.
35. Expert Lecture on “Machine Learning using WEKA” during Short Term Course on Open Source Technologies organized by NITTTR Chandigarh on 19 February 2013.
36. Expert Lecture on “MATLAB Basics” during TEQIP sponsored Two Week National Level Faculty Development Programme on “MATLAB Fundamentals and Neural Networks & Fuzzy Logic Toolboxes” on 4 December 2012.
37. Expert Lecture on “Data Warehousing and Data Mining Tools” during Short Term Course on Database Technologies organized by NITTTR Chandigarh on 22 November 2012.
38. Expert Lecture on “Business Intelligence, Analytics and Enterprise Performance Management” during International Conference “Confluence 2012” held at Amity School of Engineering & Technology, on 27-28 September 2012.
39. Expert Lecture on “Introduction to MATLAB” is given at CGC Gharuan in “FDP on Image Processing” on 15 May 2012.
40. Expert Lecture on “Image Enhancements” is given at CGC Gharuan in “FDP on Image Processing” on 18 May 2012.
41. Expert Lecture on “Image Enhancements and Spatial Filters” is given at CT Institute of Engineering & Management, Jalandhar in “FDP on Image Processing” on 22 May 2012.
42. Expert Lecture on “Image Transformations” is given at CGC Gharuan in “FDP on Image Processing” on 24 May 2012.
43. Expert Lecture on “Advance Database Systems” is delivered during Jan –March 2012 at CDAC Mohali.
44. Expert Lecture on “Data Mining for Pharmacy” is delivered on 7th March 2012 at National Institute of Pharmaceutical Education & Research (NIPER), Mohali.
45. Expert Lecture on “Data Mining Tools” is delivered on 9th March 2012 at National Institute of Pharmaceutical Education & Research (NIPER), Mohali.
46. Expert Lecture on “Data Mining tools: Weka” is delivered in NITTTR, Chandigarh on 22 Sep 2011 during national level course on Open Source Technologies.

47. Expert Lecture of Data Integration using Pentaho is delivered on 14 November 2011 at NITTTR, Chandigarh
48. Expert Lecture on Advance Software Engineering is delivered during Sep-Nov 2011 at CDAC Mohali.
49. Expert Lecture on Applications on Artificial Intelligence is delivered on 13th April 2011 at Swami Vivekananda Institute of Engineering & Technology, Banur, Patiala.
50. Expert Lecture on Web Mining is delivered on March 2009 at Chitkara Institute, Rajpura.
51. Expert Lecture on Computers Today and Tomorrow is delivered on January 2009 at Ashoka Sr. Sec School Amritsar.
52. Expert Lecture on Awareness of Computers is delivered on May 2008 at Ashoka Sr. Sec School Amritsar.
53. Expert Lecture on Multimedia Systems is delivered on June 2008 at NITTTR, Chandigarh
54. Expert Lecture on Computers Today is delivered on January 2006 at Ashoka Sr. Sec School Amritsar.
55. Expert Lecture on Multimedia Architecture is delivered on December 2005 at NITTTR, Chandigarh
56. Expert Lecture on Multimedia Systems is delivered on November 2005 at NITTTR, Chandigarh.
57. Expert Lecture on Operating Systems is delivered on July 2005 at NITTTR, Chandigarh

(Naveen Aggarwal)

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