

Prof. Naveen Aggarwal

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

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Sector 49-D
Chandigarh-160047

Academic Qualification

Standard	Year	Board/Univ	Remarks
B.E. (CSE.)	2000	Punjab Tech. Univ.	Bronze Medalist
M.Tech (CSE)	2002	IIT Kharagpur	2nd in the IIT
Ph.D	2011	GGs IP University, Delhi	

Work Experience

Institution	Designation	Year/Session
UIET, Panjab University, Chandigarh	Professor	Oct 2018 to Till Date
UIET, Panjab University, Chandigarh	Associate Prof	Oct 2015 to Oct 2018
UIET, Panjab University, Chandigarh	Assistant Prof	Feb 2005 to Oct 2015
Punjab Engineering College, Chandigarh.	Lecturer	Feb 2002 to Feb 2005

Total Experience: 22 + years

Total Publications: 175+

International Journals: 62+ (More than 38 SCI/SCIE Publications), International Book chapters: 32+,

International Conferences: 50+, National Conferences: 30 (ORCID: 0000-0003-1549-531X)

Books Published: 01 by CENGAGE Publishers, Edited:01

Patent Granted: 02, Patent Published: 5

- An Oral Healthcare Education System and Apparatus Thereof, **Indian Patent Granted** # 394273
- AcouAlert: An Automatic Acoustic Event Sensing and Triggering Device, **Indian Patent Granted** # 461635

Total Research Projects/ Grants (Govt/Industry Funded): 20

ME Students Guided: 48, PhD Students Completed/ Thesis Submitted: 10

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

S.No	Projects Name of Project	Sponsoring Agency	Duration (Period)	Role	Amount Sanctioned
1.	Development of Multimodal and Multilingual Human Emotion Detection System, From	IIT Mandi iHub and HCI Foundation	2 Years	Co-PI	Rs 32.4 Lacs
2.	AI-Enabled low-cost handheld device for Writer Verification and Offline Signature Verification	DFSS, MHA, GoI	3 years (2022-2024)	Co-PI	Rs 38 Lacs
3.	Artificial Intelligence based reproducible diagnostic solution for early detection of furcation radiolucency in primary mandibular molars	ICMR	2 Years	PI	Rs 18.34 Lacs
4.	Early Detection of Landfill Fire in Dadu Majra, Chandigarh	DST, chandigarh	1 Year	Co-PI	Rs 1.2 Lacs
5.	Cyber Security- Challenges under Cyber Space Specially for Women users –Investigating Cyber Initiated Crime against Women Users in Punjab State (SNo:13(02)/2020-21/NCW(RS))	National Commission of Women, Delhi	1 year (2020-2021)	Co- Investigator	Rs 14.04 Lacs
6.	Landslide Forewarning System for Manikaran, Himachal Pradesh (NGP?LS/MaheshThakur/TPN-34319/2019 (C))	DST	3 years (2020-2022)	Co- Investigator	Rs 56 Lacs
7.	Implementation of PyVHR Solution on Cloud	Curio Digital Therapeutics Ltd.	2021	Consultant	Rs 1.26 lacs
8.	Rootworkz learning Platform	PSCS& T (DST)	1 Year (2020-2021)	Principal Investigator	Rs 50,000
9.	Design and Development of Recruitment Portal	4 Technozone Solutions Pvt. Ltd.	2021	Consultant	Rs 65000/-
10.	Development of Website for BG Unified Solutions	BG Unified Solutions Pvt . Ltd.	2021	Consultant	Rs 1.25 lacs
11.	Development of Quadcopter with thermal camera in Compliance with DGCA Guidelines	Space Jam Technologies	1 year 2020-2021	Consultant	Rs 2 lacs
12.	Design Innovation Centre: Subtheme: Traffic Sensing & Information Technologies	MHRD	11Years 2015-2026	Principal Investigator	Rs 10 Crores for full project

13.	Design and Development of Tinkerable projects for School Students	Saksham Creative Education Pvt. Ltd.	1 Year 2018	Consultant	Rs 1.25 lacs
14.	CARTS: Communication Assisted Road Transport System (ITRA/i5(6i)/Mobile/CARTS/o2/2015)	ITRA, Media Lab Asia (DEITY)	5 Years (2013-2018)	Principal Investigator	Total=1.28 Crores (RS 12.6 lacs for UIET)
15.	Armor Wire Tester	Oceaneering Pvt. Ltd.	2016	Joint Investigator	40 Lacs
16.	A tool based Effort Estimation Model	Infosys Technologies Ltd.	2006	Principal Investigator	1 Lacs
17.	SMS Based Result Information System	Panjab University	2007	Principal Designer	10000
18.	Speaker Recognition and Identification for VoIP	MHRD under TEQIP-II	2013-2014	Principle Investigator	1.20 lacs
19.	Subjective Assessment of Video quality for validation of objective metrics	MHRD under TEQIP-II	2013-2014	Principle Investigator	1.33 lacs
20.	TEQIP-II Implementation in various institutes at Chandigarh	World Bank through MHRD	Three Years 2012-2015	Consultant at State Project Facilitation Unit.	

Industrial projects Completed

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

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

1. “CrowdLoc: Cellular Fingerprinting for Crowds by Crowds”. ACM Transaction on Sensor Networks. (SCIE Indexed) 14, 1, Article 4 (January 2018), 36 pages.
2. “ Smartphone based traffic state detection using acoustic analysis and crowdsourcing”, Applied Acoustics, Volume 138, September 2018, Pages 80-91, ISSN 0003-682X,
3. “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),

4. "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,
5. "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,.
6. "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,
7. "Keyword Binning-Based Efficient Search on Encrypted Cloud Data", in *Springer Arabian Journal for Science and Engineering*, issn=2191-4281", 12 September 2018, (SCIE Indexed).
8. "Document clustering for efficient and secure information retrieval from cloud" in *Wiley International Journal of Concurrency Computation Practice and experience*. 2019; e5127. December 2018.
9. "Searchable Encryption: A Survey on Privacy-Preserving Search Schemes on Encrypted Outsourced Data" in *Wiley International Journal of Concurrency Computation Practice and Experience*. January 2019.
10. "Convolutional neural networks based potholes detection using thermal imaging", *Journal of King Saud University - Computer and Information Sciences*, 2019,
11. "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
12. 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),.
13. 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 2019.
14. 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).
15. Singh, Gurpreem, Ajay Mittal, and Naveen Aggarwal. "ResDNN: Deep Residual Learning for Natural Image Denoising." *IET Image Processing* (2020).
16. 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,.
17. Dinesh Vij, Naveen Aggarwal. Transportation Mode Detection Using Cumulative Acoustic Sensing and Analysis, *Springer, Frontier of Computer Science.*, Vol:15, Issue: 1, November 2020,
18. Singh, R.D., Aggarwal, N. Optical flow and pattern noise-based copy–paste detection in digital videos. *Multimedia Systems* (2021)..
19. Kaur, Sukhveer, Krishan Kumar, and Naveen Aggarwal. "A review on P4-Programmable data planes: Architecture, research efforts, and future directions." *Computer Communications* (2021).
20. Singh, P., Dutta, M. & Aggarwal, N. Hybrid Meta-heuristic Approach for Workflow Scheduling in IaaS Cloud. *Arab J Sci Eng* (2021).
21. Rigzin Angmo, Naveen Aggarwal, Veenu Mangat, Anurag Lal, and Simarpreet Kaur. 2021. An Improved Clustering Approach for Identifying Significant Locations from Spatio-temporal Data. *Wireless Personal Communications* (2021),
22. Sukhveer Kaur, Krishan Kumar, Naveen Aggarwal, Gurdeep Singh, A Comprehensive Survey of DDoS Defense Solutions in SDN: Taxonomy, Research Challenges, and Future Directions, In *Elsevier Computers & Security*, Volume 110, November 2021, ISSN 0167-4048,
23. Sudhakar Kumar, Sunil Kr. Singh, Kriti Aggarwal & Naveen Aggarwal, Evaluation of automatic parallelization algorithms to minimize speculative parallelism overheads: An experiment, *Journal of Discrete Mathematical Sciences and Cryptography*, Taylor and Francis 24:5, 1517-1528, 2021
24. Mankirat Kaur, Sarbjeet Singh, Naveen Aggarwal, "Missing traffic data imputation using a dual-stage error-corrected boosting regressor with uncertainty estimation", *Information Sciences*, Volume 586, Pages 344-373,

25. Nabi ST, Kumar M, Singh P, Aggarwal N, Kumar K. A comprehensive survey of image and video forgery techniques: variants, challenges, and future directions. *Multimedia Systems*. 28, 939–992, 2022 Jan 30:1-54.
26. Kingra, S., Aggarwal, N. & Kaur, N. Emergence of deepfakes and video tampering detection approaches: A survey. *Multimedia Tools and Applications* (2022).
27. Kumar, S, Singh, SK, Aggarwal, N, Gupta, BB, Alhalabi, W, Band, SS. An efficient hardware supported and parallelization architecture for intelligent systems to overcome speculative overheads. *Int J Intell Syst*. 2022; 1- 27. doi:10.1002/int.23062, Impact factor (2021):8.993.
28. Staffy Kingra, Naveen Aggarwal, Nirmal Kaur, “LBPNNet: Exploiting texture descriptor for deepfake detection”, *Forensic Science International: Digital Investigation*, Volume 42, 2022, 301452, ISSN 2666-2817, IF=1.805.
29. Singh, L., Aggarwal, N. & Singh, S. PUMAVE-D: panjab university multilingual audio and video facial expression dataset. *Multimedia Tools and Applications* (2022). <https://doi.org/10.1007/s11042-022-14102-5>

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. 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*
3. 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*
4. 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*
5. 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*
6. 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.*
7. 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.*
8. 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*
9. 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.*

10. 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
11. 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.
12. 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.
13. 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.
14. 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, August 2020, Print ISBN:978-981-15-6875-6, Online ISBN: 978-981-15-6876-3
15. Kaur S., Kumar K., Aggarwal N. (2021) DDoS Defense Mechanisms for SDN Control Plane. In: Smys S., Palanisamy R., Rocha Á., Beligiannis G.N. (eds) Computer Networks and Inventive Communication Technologies. Lecture Notes on Data Engineering and Communications Technologies, vol 58. Springer, Singapore. https://doi.org/10.1007/978-981-15-9647-6_83 Print ISBN 978-981-15-9646-9, Online ISBN 978-981-15-9647-6
16. Kaur S., Kumar K., Aggarwal N. (2021) A Review of Security Threats in Software-Defined Networking. In: Singh B., Coello Coello C.A., Jindal P., Verma P. (eds) Intelligent Computing and Communication Systems. Algorithms for Intelligent Systems. Springer, Singapore. https://doi.org/10.1007/978-981-16-1295-4_13, Print ISBN 978-981-16-1294-7, Online ISBN 978-981-16-1295-4
17. Saluja, Kshitij, and Naveen Aggarwal. "Real-Time Detection of Inter-Frame Video Forgeries in Surveillance Videos." In Progress in Advanced Computing and Intelligent Engineering, pp. 497-505. vol 1299. Springer, Singapore, April, 2021.. https://doi.org/10.1007/978-981-33-4299-6_41, Print ISBN: 978-981-33-4298-9 Online ISBN: 978-981-33-4299-6
18. Singh P., Dutta M., Aggarwal N. (2021) Budget-Oriented Reliable WDO Algorithm for Workflow Scheduling in Cloud Systems. In: Communication and Intelligent Systems. Lecture Notes in Networks and Systems, vol 204. 29 June 2021 Springer, Singapore. https://doi.org/10.1007/978-981-16-1089-9_59, Print ISBN: 978-981-16-1088-2, Online ISBN: 978-981-16-1089-9
19. Singh, V.P., Vijay, T., Tushita, Sonal, Angmo, R., Aggarwal, N. (2022). Secure Communication in Peer-to-Peer Network Based on Trust-Based Model. In: Cyber Security in Intelligent Computing and Communications. Studies in Computational Intelligence, vol 1007. Springer, https://doi.org/10.1007/978-981-16-8012-0_13, 12 March 2022, Print ISBN: 978-981-16-8011-3
20. Kaur, K., Kaur, S., Kumar, K., Aggarwal, N., & Mangat, V. (2022). Mininet-WiFi as Software-Defined Wireless Network Testing Platform. In Security and Resilience of Cyber Physical Systems (pp. 91-102). Chapman and Hall/CRC.
21. Aggarwal, T., Sharma, N., Aggarwal, N. (2023). Gunshot Detection and Classification Using a Convolution-GRU Based Approach. In Advances in Intelligent Systems and Computing, vol 1414. Springer, https://doi.org/10.1007/978-981-19-4182-5_8

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 implement 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.

Other Achievements:

- **Organizing Secretary** of 3rd **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.

(Naveen Aggarwal)
