

Dr. Anup Kumar Gupta

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Google Scholar
anupkumargupta.github.io

Research Interests: Multimodal Affective Computing, Remote Physiological Estimation (rPPG), Trustworthy AI for Healthcare

EDUCATION

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- Indian Institute of Technology Indore** Aug. 2021 - Sep. 2025
 - Doctor of Philosophy, Computer Science and Engineering* CPI: 10/10
 - Prime Minister Research Fellowship
 - Thesis: Exploring Trustworthy Multimodal Learning for Mental and Physiological Health Assessment
 - Indian Institute of Technology Indore** Aug. 2019 - Jul. 2021
 - M.S.(Research) - Computer Science and Engineering* CPI: 10/10
 - Thesis: Adversarial Attack on Visual Speech Recognition Models
 - Dr. A.P.J. Abdul Kalam Technical University, Lucknow** Aug. 2013 - Jul. 2017
 - Bachelor of Technology - Computer Science and Engineering* Score: 78.42%

PUBLICATIONS

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- **Anup Kumar Gupta**, Puneet Gupta, Abhinav Dhall. “Hierarchical Cross-Attention Transformer for Non-contact Multimodal Pain Classification using Remote Physiological Signals and Visual Features”, *International Conference on Automatic Face and Gesture Recognition (Accepted, 2026)*.
 - Trishna Saikia, **Anup Kumar Gupta**, Puneet Gupta, Pasi Liljeberg. “Exploring PPG-Guided Knowledge Distillation for Contactless Respiration Estimation”, *International Conference on Automatic Face and Gesture Recognition (Accepted, 2026)*.
 - Aditya Dixit, **Anup Kumar Gupta**, Puneet Gupta, et al. “RECREATE: Supervised Contrastive Learning and inpainting-based Hyperspectral Image Denoising,” *ISPRS Journal of Photogrammetry and Remote Sensing (2026)*.
 - **Anup Kumar Gupta**, Trishna Saikia, Puneet Gupta, Abhinav Dhall. “PainXtract: A Multimodal System for Multiclass Pain Classification Using Physiological Signals”, *Companion Proceedings of International Conference on Multimodal Interaction (2025)*.
 - Vaidehi Agarwal, Trishna Saikia, **Anup Kumar Gupta**, Puneet Gupta. “SHINE: Synergizing Transformers with Contrastive Learning for Thriving rPPG-based SpO2 Estimation”, *Expert Systems with Applications (2025)*.
 - **Anup Kumar Gupta**, Ashutosh Dhamaniya, and Puneet Gupta. “RADIANCE: Reliable and interpretable depression detection from speech using Transformer”, *Computers in Biology and Medicine (2024)*.
 - Trishna Saikia, Lokendra Birla, **Anup Kumar Gupta**, and Puneet Gupta, “HREADAI: Heart rate estimation from face mask videos by consolidating Eulerian and Lagrangian approaches”, *IEEE Transactions on Instrumentation and Measurement (2023)*.
 - Aditya Dixit, **Anup Kumar Gupta**, Puneet Gupta, et al. “UNFOLD: 3D U-Net, 3D CNN and 3D Transformer based Hyperspectral Image Denoising,” *IEEE Transactions on Geoscience and Remote Sensing (2023)*.
 - **Anup Kumar Gupta**, Rupesh Kumar, Lokendra Birla, Puneet Gupta. “RADIANT: Better rPPG estimation using signal embeddings and Transformer”, *Winter Conference on Applications of Computer Vision (2023)*.
 - Lokendra Birla, Sneha Shukla, **Anup Kumar Gupta**, Puneet Gupta. “ALPINE: Improving Remote Heart Rate Estimation using Contrastive Learning”, *Winter Conference on Applications of Computer Vision (2023)*.
 - Sneha Shukla, Lokendra Birla, **Anup Kumar Gupta**, Puneet Gupta. “Trustworthy Medical Image Segmentation with improved performance for in-distribution samples”, *Neural Networks (2023)*.
 - Sneha Shukla, **Anup Kumar Gupta**, Puneet Gupta. “Exploring the feasibility of adversarial attacks on medical image segmentation”, *Multimedia Tools and Applications (2023)*.
 - **Anup Kumar Gupta**, Aryan Rastogi, Vardhan Paliwal, Fyse Nassar, Puneet Gupta. “D-NEXUS: Defending text networks using summarization”, *Electronic Commerce Research and Applications (2022)*.
 - **Anup Kumar Gupta**, Vardhan Paliwal, Aryan Rastogi, Puneet Gupta. “TRIESTE: Translation based defense for text classifiers”, *Journal of Ambient Intelligence and Humanized Computing (2022)*.
 - Saumya Mishra, **Anup Kumar Gupta**, and Puneet Gupta. “DARE: Deceiving Audio-visual speech Recognition model.” *Knowledge-Based Systems (2021)*.

- **Anup Kumar Gupta**, Puneet Gupta, and Esa Rahtu. “FATALRead – Fooling visual speech recognition models.” *Applied Intelligence* (2021).
- Jainendra Shukla, Puneet Gupta, Aniket Bera, Arka Sarkar, Prakhar Goel, Shubhangi Butta, **Anup Kumar Gupta**, et al. “Contextual Emotion Learning Challenge.” In *16th IEEE International Conference on Automatic Face and Gesture Recognition* (2021).

PATENT

- Puneet Gupta, Trishna Saikia, **Anup Kumar Gupta**. “System, apparatus, and method for heart rate determination of individuals wearing face mask”, Filed under Indian jurisdiction (Ref. No: 202321071568).

WORK EXPERIENCE

- **Indian Institute of Technology Indore** *Indore, Madhya Pradesh*
Translational Research Scholar *Sep. 2025 - Present*
 - Working on SEHAT: Smartphone-enabled remote Heart Rate Assessment and Tracking application.
- **Purdue University** *Lafayette, USA*
Visiting Research Scholar *Jun. 2024 - Jul. 2024*
 - Research visit under the Short Term Research Fellowship.
 - Developed context-aware multimodal sentiment analysis models.
- **Shri G S Institute of Technology & Science (SGSITS)** *Indore, Madhya Pradesh*
Guest Faculty and Course Co-ordinator *Oct. 2021 - Aug. 2025*
 - Teaching under the Prime Minister Research Fellowship (PMRF) scheme.
 - **Courses Taught:** Artificial Intelligence; Soft Computing; Artificial Intelligence and Machine Learning
- **Indian Institute of Technology Indore** *Indore, Madhya Pradesh*
Lab Instructor *Dec. 2020*
 - National Project Implementation Unit (NPIU) courses
 - Technical Education Quality Improvement Programme (TEQIP) courses
 - Conducted lab sessions, hands-on training, and doubt-clearing sessions on Machine Learning and Deep Learning.
- **Kwench Global Technologies Pvt. Ltd.** *Noida, Uttar Pradesh*
Software Engineer *Oct. 2017 - Apr. 2018*
 - Developed Workplace bots as part of a team that is a Product Partner of Workplace, an enterprise connectivity platform by Facebook.
 - Contributed to the Reward and Recognition platform used by over 500 companies across 63 countries.
 - Designed and developed rule-based configurations enabling flexible reward system customization without code changes.
- **Novoinvent Software Pvt. Ltd.** *Noida, Uttar Pradesh*
Software Engineer *Jun. 2017 - Sep. 2017*
 - Worked on a U.S. government insurance project for the state of Maryland, “Maryland Health Connection,” the state’s official health insurance marketplace.
- **Software Development Centre (Software Incubator)** *Ghaziabad, Uttar Pradesh*
Student Co-ordinator/Software Engineer *Aug. 2014 - May 2017*
 - Developed a Biometric Attendance System for the faculty and staff of Ajay Kumar Garg Engineering College (AKGEC), Ghaziabad.
 - Developed and maintained more than 10 portals, websites, and platforms related to AKGEC.
 - Served as Web Team Member, Event Organiser: Tech Trishna’15, the annual national technical festival of AKGEC, which saw a footfall of 1500+ participants.
 - Developed an online registration and slot booking portal in the Blood Donation Camp, 2016 & 2017.
- **My Own Space Research Consultancy** *Ghaziabad, Uttar Pradesh*
Student Intern *Jun. 2016 - Jul. 2016*
 - Designed and developed a web platform to assist users in accessing property reviews and making informed decisions.
- **Sarvodya Ventures** *Ghaziabad, Uttar Pradesh*
Student Intern *Jun. 2015*
 - Contributed to the development of a live portal connecting transporters, truck drivers, customers, and related stakeholders.

REVIEWER

- **Conferences:** Conference on Computer Vision and Pattern Recognition (CVPR), European Conference on Computer Vision (ECCV), International Conference on Electrical, Computer, Communications and Mechatronics Engineering
- **Journals:** IEEE Transactions on Affective Computing, IEEE Transactions on Human-Machine Systems, IEEE Transactions on Multimedia, IEEE Transactions on Circuits and Systems for Video Technology, Information Fusion, Knowledge-Based Systems, Computer Vision and Image Understanding, Biomedical Signal Processing and Control, Engineering Applications of Artificial Intelligence, Neural Computing & Applications, Applied Computing and Informatics

HONORS & PROFESSIONAL ACTIVITIES

- **Outstanding Reviewer, CVPR 2025** (Top ~6% reviewers), May 2025
- **Mentored** 20+ B.Tech students; 7 M.S. (Research), M. Tech., M.Sc.; and 6 Ph.D. scholars.
- **Best Technology Award**, Indian Institute of Technology Indore, Feb. 2025
- **Best Research Paper Award**, Indian Institute of Technology Indore, Feb. 2024
- **Mentor** at Initiative for Research & Innovation in Science (IRIS), Jan. 2024
- **Awarded** Short Term Research Fellowship to visit Purdue University, USA Dec. 2023
- **Student Coordinator** of Karyashala Workshop on Synergizing Healthcare Services and Affective Computing using Deep Learning, Aug. 2023
- **Prime Minister Research Fellowship (PMRF) scholar**, IIT Indore, Aug. 2021 - Aug. 2025
- Completed MS (Research) with **Rank 1** and **perfect CGPA**
- **Student Placement Manager**, Training and Placement Cell, IIT Indore, Sep. 2019 - Aug. 2021
- **Member**, Postgraduate Academic Council, IIT Indore, Nov. 2020 - Feb. 2021
- **Instructor**, in **Rashtriya Avishkar Abhiyan**, an initiative by **Ministry of Education**, Aug. 2019
- **Student Co-ordinator**, Software Development Center (R&D center of college), Aug. 2014 - May 2017