Surbhi Madan

Project Researcher
Yamagishi Lab, NII Group
National Institute of Informatics, Tokyo, Japan

Email: er.surbhimadan.2013@gmail.com
Mobile: +91-901-2791-004

Current Position

I am currently working as a Project Researcher at NII, Tokyo (Japan), as part of the Yamagishi Lab. My research focuses on multimodal affective computing, visual deepfakes, physiological sensing, human behavior analysis, and human-computer interaction.

Education

Ph.D., Computer Science and Engineering, CGPA: 9.0/10 — July 2025
Indian Institute of Technology, Ropar, Punjab, India.
Thesis Area: Explainable Human Behavior Prediction in Social Contexts
Supervisors: Dr. Abhinav Dhall and Dr. Ramanathan Subramanian

M.Tech., Computer Science and Engineering, CGPA: 8.89/10 — June 2016
National Institute of Technology, Hamirpur, Himachal Pradesh, India
Thesis Topic: Clustering of Sensor Nodes using Spatio-Temporal Correlation
Supervisor: Dr. Rajeev Kumar

B.Tech., Information Technology, Percentage: 78.15% — June 2013
Uttar Pradesh Technical University Lucknow, Uttar Pradesh, India

Work Experience

Teaching Assistant (Jan 2021 – Dec 2025)
Indian Institute of Technology Ropar, Ropar, Punjab, India
Assisted Prof. Ramanathan Subramanian, Prof. Apurva Mudgal, Prof. Balwinder Sodhi, Prof. Shashi Shekhar Jha, and Prof. Shweta Jain in lab and tutorial sessions for courses including Computer Vision, Discrete Mathematics, Machine Learning, Reinforcement Learning, Artificial Intelligence, Introduction to Computing and Data Structures, and Software Engineering.

Teaching Assistant (Jan 2025 – Apr 2025)
NPTEL: Online Certification Course
Assisted Prof. Abhinav Dhall and Prof. Jainendra Shukla in tutorial and quiz sessions for the Affective Computing course as part of the NPTEL Online Certification Program.

Assistant Professor (July 2016 - Nov 2019)
Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India.

Teaching Assistant (July 2014 - June 2016)
National Institute of Technology, Hamirpur, Himachal Pradesh, India.
Assisted Prof. Rajeev Kumar in Lab and Quiz sessions for Discrete Mathematics and Operating Systems courses.

Research Interests

- Computer Vision
- Generative AI
- Physiological Sensing
- Multimodal Affective Computing
- Human Computer Interaction
- Visual Deepfakes

Publications

Journals

[J-3] **S. Madan**, M. Gahalawat, T. Guha, R. Goecke, R. Subramanian, 'Explainable Human-centered Traits from Head Motion and Facial Expression Dynamics', *PLOS ONE.* **(Status: Published, SCI, Q1, IF: 2.9)**.

[J-2] G. Sharma, **S. Madan**, M. Bilalpur, A. Dhall, R. Subramanian, 'EEG-based Cognitive Load Estimation of Acoustic Attributes for Data Sonification', *IEEE Transactions on Cognitive and Developmental Systems.* **(Status: Published, SCI, Q1, IF: 5.0).**

[J-1] **S. Madan**, R. Jain, R. Subramanian, A. Dhall, 'Multiview Attention Fusion for Explainable Body Language Behavior Recognition', *IEEE Transactions on Affective Computing.* **(Status: Published, SCI, Q1, IF: 9.6).**

Conferences

[C-8] A. Kataria, **S. Madan**, S. Ghosh, T. Gedeon and A. Dhall. GEMS: group emotion profiling through multimodal situational understanding. *35th IEEE International Workshop on Machine Learning for Signal Processing (IEEE MLSP 2025),* Aug 31 - Sep 3, 2025 , Istanbul, Turkey. **[Accepted]**

[C-7] **S. Madan**, S. Ghosh, L. Sookha, M.A. Ganaie, R. Subramanian, A. Dhall, T. Gedeon, 'MIP-GAF: A MLLM-annotated Benchmark for Most Important Person Localization and Group Context Understanding', Proceedings of *the IEEE/CVF Winter Conference on Applications of Computer Vision(WACV 2025)*, Feb 28 – Mar 4, 2025, Tucson, Arizona. **[CORE A | Qualis B1].**

[C-6] D. Kumar, **S. Madan**, P. Singh, A. Dhall and B. Raman, 'Towards Engagement Prediction: A Cross-Modality Dual-Pipeline Approach using Visual and Audio Features.', Proceedings of *the 32nd ACM International Conference on Multimedia (MM'24)*, October 28 - November 1, 2024, Melbourne, Australia. **[CORE A* | ERA A].**

[C-5] **S. Madan**, R. Jain, G. Sharma, R. Subramanian, A. Dhall, 'MAGIC-TBR: Multiview Attention Fusion for Transformer-based Bodily Behavior Recognition in Group Setting', Proceedings of *the 31st ACM International Conference on Multimedia (MM'23)*, pp. 9526-9530, October 29 - November 3, 2023, Ottawa, Canada. **[CORE A* | ERA A].**

[C-4] **S. Madan**, M. Gahalawat, T. Guha, R. Subramanian, 'Head matters: explainable human-centered trait prediction from head motion dynamics', Proceedings of *the 23rd ACM International Conference on Multimodal Interaction (ICMI 2021)*, pp. 435-443, October 18-22, 2021, Montreal, Canada. **[CORE B | Qualis A2].**

[C-3] D. Kumar, **S. Madan**, A. Singh, 'Modified HPSO Using TVAC and Analysis Using CEC Benchmark Functions', Proceedings of *IEEE Conference on System Modeling and Advancement in Research Trends*, 2019

[C-2] **S. Madan**, D. Kumar , A. Agnihotri, 'Privacy-Preserving Data Aggregation in Wireless Sensor', Proceedings of *IEEE Conference on System Modeling and Advancement in Research Trends*, 2018.

[C-1] L. Rajpoot, S. Singh and **S. Madan**, 'Avalanche parameters for deploying sensor nodes in snow bound region',Proceedings of *IEEE Conference on System Modeling and Advancement in Research Trends*, 2016.

Projects

PhD Course Work Project

EEG-based Cognitive Load Estimation of Acoustic Attributes for Data Sonification

This work investigates the cognitive load induced during the visualization of an astronomical image via sonification.

Pros and Cons of Image Anomaly Detection Methods

This project enumerate pros and cons of recent image anomaly detection methods. We categorize the works with respect to the nature of input data used, choice of method, anomaly score criteria, input style (single image vs multiple images), features type, and application scenarios.

Awards & Scholarships

1. Received MHRD Scholarships during M.Tech. (2014-16) and Ph.D. (2019-25).
2. Qualified GATE Computer Science, Rank 9742 in 2013 and Rank 1749 in 2014.
3. Qualified UGC-NET (Computer Science) in Dec 2018.
4. Secured 2nd place in the Multimediate Challenge at the ACM MM (Core A*) in 2023.
5. Received SIGMM Student Travel grant to attend ACM MM 2023.
6. Ranked in top 3 papers at the Multimediate Grand Challenge, ACM MM (Core A*), 2024.
7. Awarded Travel Grant to attend the Fifth Indian Symposium on Machine Learning, 2024.

Attended workshop/Training/Conferences

1. Attended IEEE International Joint Conference on Biometrics (IJCB), Osaka, Japan. September 2025.
2. IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2025) (Online Mode). February 2025
3. Attended 18^{th} International Conference on 'Automatic Face and Gesture Recognition (FG 2024)', Istanbul, Turkey. May 2024
4. Attended Indian Conference on Computer Vision, Graphics and Image Processing (ICVGIP), IIT Ropar, India. December 2024
5. Attended 5^{th} Indian Symposium on Machine Learning (IndoML). BITS Pilani Goa, India. December 2024.
6. Attended the 31^{st} ACM International Conference on 'Multimedia (MM)', Ottawa, Canada. October 2023.
7. Attended 23^{rd} ACM International Conference on Multimodal Interaction (ICMI 2021)(Online Mode) October 2021.
8. Attended a one-week winter course on "AI and ML over NKN" organized by **Electronics and ICT Academy, IIT Roorkee**. Dec 2018.
9. Attended a one-week faculty development program on "Machine Learning and Its Applications" organized by **Electronics and ICT Academy, IIT Roorkee**. Dec 2017.

Talks/ Workshops delivered

1. Served as a Resource Person in AI VicharanaShala on the topic "Curating Research Datasets" on October 21, 2024, organized by the CSE Department, IIT Ropar, India.
2. Conducted a 45-day short-term course on "PHP", a skill-oriented value-added program from 26th June to 10th August 2017 at TMU Moradabad, Uttar Pradesh, India.
3. Conducted a 45-day short-term course on "PHP" skill-oriented program from 18th June to 4th August 2018 at TMU Moradabad, Uttar Pradesh, India.
4. Conducted a 45-day short-term course on "PHP" short-term employment program from 15th June to 1st August 2019 at TMU Moradabad, Uttar Pradesh, India.

Technical Skills

Proficient in C/C++ and Python, with practical experience in MATLAB. Hands-on experience with deep learning frameworks including TensorFlow, PyTorch, and Keras.

Professional Activities

Professional Memberships: Professional member of IEEE and ACM (Association for Computing Machinery).
Research Review: Reviewed research papers in various Journals and conferences, including IEEE Transactions on Affective Computing, IEEE MultiMedia, Computer Vision and Image Understanding (CVIU) Journal, International Journal of Artificial Intelligence in Education Journal, ACM Multimedia, WACV, CVIP, ICVGIP, ICPR, IEEE FG and ICMI

Personal Details

Father's name :	Mr. Dilip Kumar	Mother's Name :	Smt. Suman Madan
Date of Birth :	Sep 13, 1992	Martial Status :	Married
Nationality :	Indian	Passport No. :	N8577100

Permanent Address: Vill.Bhawalpur Wasli, Post. Sarakara Kamal, Dist. Sambhal, Uttar Pradesh, India

References

Dr. Abhinav Dhall

Associate Professor, Monash University, Australia.

E-mail: abhinav.dhall@monash.edu

Dr. Ramanathan Subramanian

Associate Professor, Faculty of Science and Technology, University of Canberra, Australia.

E-mail: Ram.Subramanian@canberra.edu.au

Dr. Tanaya Guha

Associate Professor, School of Computing Science, University of Glasgow

E-mail: tanaya.guha@glasgow.ac.uk

Dr. Rajeev Kumar

Assistant Professor, National Institute of Technology, Hamirpur, India.

E-mail: rajeev@nith.ac.in