

Manoj Agarwal, Ph.D.

Department of Computer Science

Hansraj College

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Research Interest

Machine Learning Applications in various domains such as Text-analysis, bio-medical imaging, genomics data and robotics.

Employment History

- 2016 –  **Associate Professor** Hansraj College, University of Delhi.
- 2005 – 2016  **Assistant Professor** Hansraj College, University of Delhi, Delhi.
- 2002 – 2005  **Lecturer** Ram Lal Anand College, University of Delhi, Delhi.

Education

- 2016 – 2019  **LLB, Faculty of Law, University of Delhi**
- March 2015  **Ph.D., University of Delhi** Computer Science.
Thesis title: *Multi-Robot Coalition Formation: A Multi-objective Perspective*
Supervisor: *Prof Naveen Kumar*
- 1998 – 2001  **Masters of Computer Application, University of Delhi**
- 1995 – 1998  **B.Sc (Hons) Statistics, University of Delhi**

Certifications

- 2022  **Fundamentals of Statistics, MITx, edX.org**
 **Machine Learning with Python-From Linear Models to Deep Learning, MITx, edX.org**
- 2018  **Learning How to Learn: Powerful mental tools to help you master tough subjects, UCSan Diego, Coursera.org**
- 2013  **Machine Learning, Stanford University, Coursera.org**

PhD Supervision

-  **Indranath Chatterjee**
Thesis Title: *Automated Diagnosis of Schizophrenia and Identification of Affected Brain Regions*
-  **Sheetal Rajpal nee Sheetal Taneja**
Thesis Title: *Use of Explainable AI in Biomarker Discovery for Breast Cancer Stratification and Interpretation of Proposed COVID-19 Detection Models*

Industry Collaborations/Consultancy

-  **Nvidia Corporation**
-  **Tata Consultancy Services**

Industry Collaborations/Consultancy (continued)

- All India Institute of Medical Sciences
- Saral Advanced Diagnostics PVT. LTD.
- Analytica DataLabs
- Hero Vired

Research Publications

Journal Articles

- 1 Dwivedi, K., Rajpal, A., Rajpal, S., Kumar, V., Agarwal, M., & Kumar, N. (2024a). Enlightening the path to nsclc biomarkers: Utilizing the power of xai-guided deep learning. *Computer Methods and Programs in Biomedicine*, 243, 107864. [doi:https://doi.org/10.1016/j.cmpb.2023.107864](https://doi.org/10.1016/j.cmpb.2023.107864)
- 2 Dwivedi, K., Rajpal, A., Rajpal, S., Kumar, V., Agarwal, M., & Kumar, N. (2024b). Xlir-net: Explainable ai-driven improved l1-regularized deep neural architecture for nsclc biomarker identification. *Computational Biology and Chemistry*, 108, 107990. [doi:https://doi.org/10.1016/j.combiolchem.2023.107990](https://doi.org/10.1016/j.combiolchem.2023.107990)
- 3 Pandey, G., Bagri, R., Gupta, R., Rajpal, A., Agarwal, M., & Kumar, N. (2024). Robust weighted general performance score for various classification scenarios. *Intelligent Decision Technologies*, 18(3), 2033–2054. [doi:10.3233/IDT-240465](https://doi.org/10.3233/IDT-240465)
- 4 Dua, V., Rajpal, A., Rajpal, S., Agarwal, M., & Kumar, N. (2023). I-flash: Interpretable fake news detector using lime and shap. *Wireless Personal Communications*, 131(4), 2841–2874.
- 5 Dwivedi, K., Rajpal, A., Rajpal, S., Agarwal, M., Kumar, V., & Kumar, N. (2023). An explainable ai-driven biomarker discovery framework for non-small cell lung cancer classification. *Computers in Biology and Medicine*, 153, 106544. [doi:https://doi.org/10.1016/j.combiomed.2023.106544](https://doi.org/10.1016/j.combiomed.2023.106544)
- 6 Mishra, R., Rajpal, A., Bhatia, V., Rajpal, S., Agarwal, M., Kumar, N. et al. (2023). I-ldd: An interpretable leaf disease detector. *Soft Computing*, 1–17.
- 7 Rajpal, S., Rajpal, A., Agarwal, M., Kumar, V., Abraham, A., Khanna, D., & Kumar, N. (2023). Xai-cnvmarker: Explainable ai-based copy number variant biomarker discovery for breast cancer subtypes. *Biomedical Signal Processing and Control*, 84, 104979. [doi:https://doi.org/10.1016/j.bspc.2023.104979](https://doi.org/10.1016/j.bspc.2023.104979)
- 8 Rajpal, S., Rajpal, A., Saggarr, A., Vaid, A. K., Kumar, V., Agarwal, M., & Kumar, N. (2023). Xai-methylmarker: Explainable ai approach for biomarker discovery for breast cancer subtype classification using methylation data. *Expert Systems with Applications*, 225, 120130. [doi:https://doi.org/10.1016/j.eswa.2023.120130](https://doi.org/10.1016/j.eswa.2023.120130)
- 9 Rajpal, S., Agarwal, M., Rajpal, A., Lakhyani, N., & Kumar, N. (2022). Cov-elm classifier: An extreme learning machine based identification of covid-19 using chest x-ray images. *Intelligent-Decision-Technologies*, 16(1), 193–203.
- 10 Rajpal, S., Agarwal, M., Kumar, V., Gupta, A., & Kumar, N. (2021). Triphasic deepbrca-a deep learning-based framework for identification of biomarkers for breast cancer stratification. *IEEE Access*, 9, 103347–103364. [doi:10.1109/ACCESS.2021.3093616](https://doi.org/10.1109/ACCESS.2021.3093616)
- 11 Chatterjee, I., Kumar, V., Rana, B., Agarwal, M., & Kumar, N. (2020a). Identification of changes in grey matter volume using an evolutionary approach: An mri study of schizophrenia. *Multimedia Systems*, 1–14.

- 12 Chatterjee, I., Kumar, V., Rana, B., Agarwal, M., & Kumar, N. (2020b). Impact of ageing on the brain regions of the schizophrenia patients: An fmri study using evolutionary approach. *Multimedia Tools and Applications*, 79(33), 24757–24779.
- 13 Deshmukh, S., Agarwal, M., Gupta, S., & Kumar, N. (2020). Moea for discovering pareto-optimal process models: An experimental comparison. *International Journal of Computational Science and Engineering*, 21(3), 446–456.
- 14 Indranath, C., Kumar, V., Sahil, S., Divyanshi, D., Bharti, R., Manoj, A., & Kumar, N. (2019). Identification of brain regions associated with working memory deficit in schizophrenia. *F1000Research*, 8.
- 15 Chatterjee, I., Agarwal, M., Rana, B., Lakhyani, N., & Kumar, N. (2018). Bi-objective approach for computer-aided diagnosis of schizophrenia patients using fmri data. *Multimedia Tools and Applications*, 77(20), 26991–27015.
- 16 Agarwal, M., Agrawal, N., Sharma, S., Vig, L., & Kumar, N. (2015). Parallel multi-objective multi-robot coalition formation. *Expert Systems with Applications*, 42(21), 7797–7811.
doi:<https://doi.org/10.1016/j.eswa.2015.05.032>
- 17 Agarwal, M., Kumar, N., & Vig, L. (2014). Non-additive multi-objective robot coalition formation. *Expert Systems with Applications*, 41(8), 3736–3747. doi:<https://doi.org/10.1016/j.eswa.2013.11.044>
- 18 Agarwal, M., Vig, L., & Kumar, N. (2011b). Multiple objective robot coalition formation. *J. Intell. Syst.*, 20, 395–413. doi:DOI10.1515/JISYS.2011.020

Conference Proceedings

- 1 Agarwal, M., Vig, L., & Kumar, N. (December 14-16, 2011.). Morcfa: A multiple objective robot coalition formation algorithm. In *5th indian international conference on artificial intelligence (iicai-11), tumkur, India*.
- 2 Kundu, S., Agarwal, M., Gupta, S., & Kumar, N. (2018). Discovering pareto-optimal process models: A comparison of moea techniques. In *Proceedings of the genetic and evolutionary computation conference companion* (pp. 286–287).
- 3 Agrawal, N., Sharma, S., & Agarwal, M. (2014). Parallel multi-objective multi-robot coalition formation. In *Gpu technology conference*.
- 4 Agarwal, M., Vig, L., & Kumar, N. (2011a). Multi-objective robot coalition formation for non-additive environments. In *International conference on intelligent robotics and applications* (pp. 346–355). Springer.
- 5 Agarwal, M., Agrawal, R. K., & Kumar, N. (2006). Identification of relevant feature sets for multi-class intrusion detection problem. In *National conference on methods and models in computing*.

References

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