

Objective A career with a high degree of creativity and innovativeness thereby opening avenues for self-development and growth to bring out the best in me to contribute towards research, academics, and the growth and excellence of the institutions I am part of.

Education **University Teaching Qualification (BKO)**
Leiden University, The Netherlands | April 2025

Ph.D. (Computer Science and Engineering)
Indian Institute of Technology Ropar, India | July 2014 - October 2018 |
9.65 CGPA
Thesis Title: Fast and Efficient Methods to Estimate Global Rank of the Nodes in Complex Networks

Bachelor of Technology (Computer Science and Engineering)
Institute of Engineering and Technology, Lucknow, India | 2007-2011 |
Graduated with Honors

Higher Secondary (10+2)
U.P. Board | 2006 |
Graduated with Honors

Secondary (Matriculation)
U.P. Board | 2004 |
Graduated with Honors

Areas of Interest Data Science, Complex Networks, Social Network Analysis, Computational Social Science, Social Media, Fairness

Experience **LIACS, Leiden University, Netherlands**
Assistant Professor | May 2023 to Present | CNS group

Department of Computer Science, University of Victoria, Canada
Adjunct Professor | December 2024 to Present

LIACS, Leiden University, Netherlands
Research Fellow | February 2023 to April 2023 | CNS group

Department of Mathematics and Computer Science, Eindhoven University of Technology, Netherlands
Visiting Research Fellow | February 2023 - April 2023 | Data Mining Group
Research Fellow | March 2020 to February 2023 | Data Mining group

National University of Singapore

Research Fellow | November 2018 to March 2020 | Institute of Data Science,
School of Computing, NUS, Singapore

**Department of Computer Science and Engineering, Indian Institute of
Technology Ropar, India**

Research Scholar | July 2014 to October 2018 | Punjab, India

State Bank Of India

IT Officer (Assistant Manager) | August 2013 to July 2014 | Patiala, Punjab,
India

Newgen Software Technology Ltd.

Software Developer | July 2011 to August 2013 | New Delhi, India

Tulip Telecom

Intern | May 2010 to July 2010 | New Delhi, India

**Non-academic
Positions held**

- **Member of LIACS diversity and inclusion committee (DivCom)**
March 2023 - Present
- **Chairperson at ACM Chapter IIT Ropar, India**
January 2018 - January 2019
- **Chairperson at ACM-Women Chapter IIT Ropar, India**
January 2018 - January 2019

Publications Journals

1. **Saxena, A.**, Fletcher, G. and Pechenizkiy, M., 2024. FairSNA: Algorithmic Fairness in Social Network Analysis. *ACM Computing Survey*. <https://doi.org/10.1145/3653711>
2. Setia, S., Chhabra, A., Arjun Verma, A. and **Saxena, A.**, 2024. Mediating effects of NLP-based parameters on the readability of crowdsourced wikipedia articles. *Applied Intelligence*, pp.1-22. <https://doi.org/10.1007/s10489-024-05399-w>
3. Pandey, P.K., Arya, A. and **Saxena, A.**, 2023. X-distribution: Retraceable Power-Law Exponent of Complex Networks. *ACM Transactions on Knowledge Discovery from Data*. <https://doi.org/10.1145/3639413>
4. Fajri, R.M., **Saxena, A.**, Pei, Y. and Pechenizkiy, M., 2024. Fal-cur: fair active learning using uncertainty and representativeness on fair clustering. *Expert Systems with Applications*, 242, p.122842. <https://doi.org/10.1016/j.eswa.2023.122842>

5. **Saxena, A.**, Gutiérrez Bierbooms, C. and Pechenizkiy, M., 2023. Fairness-aware fake news mitigation using counter information propagation. *Applied Intelligence*, pp.1-22.
<https://doi.org/10.1007/s10489-023-04928-3>
6. Arya, A., Pandey, P. K., **Saxena, A.** (2023). Balanced and Unbalanced Triangle Count in Signed Networks. Accepted in IEEE Transactions on Knowledge and Data Engineering. [10.1109/TKDE.2023.3272657](https://doi.org/10.1109/TKDE.2023.3272657)
7. Panchendrarajan, R. and **Saxena, A.**, 2022. Topic-based influential user detection: a survey. *Applied Intelligence*, pp.1-27.
<https://doi.org/10.1007/s10489-022-03831-7>
8. **Saxena, A.**, Fletcher, G. and Pechenizkiy, M., 2022. Nodesim: Node similarity based network embedding for diverse link prediction. *EPJ Data Science*, 11(1), pp.1-22.
<https://doi.org/10.1140/epjds/s13688-022-00336-8>
9. Miller, R., **Saxena, A.** and Gera, R., 2022. A Community-Guided Approach for Dark Network Disruption. *Military Operations Research*, 27(1), pp.23-44. <https://www.jstor.org/stable/27116754>
10. **Saxena, A.**, Fletcher, G., & Pechenizkiy, M. (2021). HM-EIICT: Fairness-aware link prediction in complex networks using community information. *Journal of Combinatorial Optimization*, 1-18.
<https://doi.org/10.1007/s10878-021-00788-0>
11. **Saxena, A.**, & Reddy, H. (2021). Users roles identification on online crowdsourced Q&A platforms and encyclopedias: a survey. *Journal of Computational Social Science*, 1-33.
<https://doi.org/10.1007/s42001-021-00125-9>
12. **Saxena, A.**, Gera, R., Bermudez, I., Cleven, D., Kiser, E. T., & Newlin, T. (2019). Twitter Response to Munich July 2016 Attack: Network Analysis of Influence. *Frontiers in Big Data*, 2, 17.
<https://doi.org/10.3389/fdata.2019.00017>
13. **Saxena, A.**, Gera, R., & Iyengar, S. R. S. (2019). A heuristic approach to estimate nodes' closeness rank using the properties of real world networks. *Social Network Analysis and Mining*, 9(1), 1-16.
<https://doi.org/10.1007/s13278-018-0545-7>
14. Gupta, Y., Iyengar, S. R. S., **Saxena, A.**, & Das, D. (2019). Modeling memetics using edge diversity. *Social Network Analysis and Mining*, 9(1), 1-17. <https://doi.org/10.1007/s13278-018-0546-6>
15. **Saxena, A.**, Gera, R., & Iyengar, S. R. S. (2018). Estimating degree rank in complex networks. *Social Network Analysis and Mining*, 8(1), 1-20.
<https://doi.org/10.1007/s13278-018-0520-3>

Conferences

16. Rrubaa Panchendrarajan, Harsh Saxena, and **Akrati Saxena**. Social

Media and Academia: How Gender Influences Online Scholarly Discourse, Accepted at the CsoNet Conference

17. Kirtidev Mohapatra, Harsh Vardhan Singh, Rishi Ranjan Singh, and **Akrati Saxena**. Fairness-aware Analysis of Centrality Measures in Social Networks, Accepted at the CsoNet Conference
18. Wu, L., **Saxena, A.** Traag, V., 2024. Geography in Scientific Practice and Country Biases, Accepted at the *28th International Conference on Science, Technology and Innovation Indicators (STI)*.
19. de Vink, E. and Saxena, A., 2024, December. Group Fairness Metrics for Community Detection Methods in Social Networks. In *International Conference on Complex Networks and Their Applications* (pp. 43-56). Cham: Springer Nature Switzerland.
https://doi.org/10.1007/978-3-031-82435-7_4
20. Gera, R., Reith, M., Bartolf, D., Tick, S. and **Saxena, A.** Collaborative networks of knowledge. In *the International Conference on Education and New Developments (END) 2024*. (pp. 130-134). inScience Press.
[ISBN: 978-989-35106-9-8 pdf](#)
21. Soodhani K N., Alekh V., **Saxena, A.** and Rajendran, R., 2024. Unraveling Learner Self-Efficacy in the Electronic Making: Insights from Interaction Analysis, Self-Reports and Interview. In *Proceedings of the 18th International Conference of the Learning Sciences-ICLS 2024*, pp. 1454-1457. International Society of the Learning Sciences.
22. Olivares, E.S., Boekhout, H.D., **Saxena, A.** and Takes, F.W., 2023, November. A Framework for Empirically Evaluating Pretrained Link Prediction Models. In *International Conference on Complex Networks and Their Applications* (pp. 150-161). Cham: Springer Nature Switzerland.
23. Liang, Z., Li, Y., Huang, T., **Saxena, A.**, Pei, Y. and Pechenizkiy, M., 2023, November. Heterophily-Based Graph Neural Network for Imbalanced Classification. In *International Conference on Complex Networks and Their Applications* (pp. 74-86). Cham: Springer Nature Switzerland.
24. Su, Z., Helles, R., Al-Laith, A., Veilahti, A., **Saxena, A.** and Simonsen, J.G., 2023, August. Privacy Lost in Online Education: Analysis of Web Tracking Evolution. In *International Conference on Advanced Data Mining and Applications* (pp. 440-455). Cham: Springer Nature Switzerland. https://doi.org/10.1007/978-3-031-46664-9_30
25. Doewes, A., Kurdhi, N. and **Saxena, A.**, 2023, July. Evaluating quadratic weighted kappa as the standard performance metric for automated essay scoring. In *16th International Conference on Educational Data Mining, EDM 2023* (pp. 103-113). International Educational Data Mining Society (IEDMS). <https://doi.org/10.5281/zenodo.8115784>
26. **Saxena, A.**, Sethiya, N., Saini, J.S., Gupta, Y. and Iyengar, S.R.S., 2023, February. Social network analysis of the caste-based reservation system

- in India. In *Computational Data and Social Networks: 11th International Conference, CSoNet 2022, Virtual Event, December 5–7, 2022, Proceedings* (pp. 203-214). Cham: Springer Nature Switzerland.
https://doi.org/10.1007/978-3-031-26303-3_18
27. Kapadia, P., **Saxena, A.**, Das, B., Pei, Y. and Pechenizkiy, M., 2023, January. Co-Attention Based Multi-contextual Fake News Detection. In *Complex Networks XIII: Proceedings of the 13th Conference on Complex Networks, CompleNet 2022* (pp. 83-95). Cham: Springer International Publishing. https://doi.org/10.1007/978-3-031-17658-6_7
 28. Soumita Das, Anupam Biswas and **Akrati Saxena**. DCC: A Cascade based Approach to Detect Communities in Social Networks. (*Accepted in CHSN 2022 Conference*)
 29. Gera, R., Bartolf, D., Tick, S., and **Saxena, A.** (2022) CHUNK Learning: A Tool that Supports Personalized Education. *Proceedings of the 15th International Conference on Educational Data Mining*, 743–747.
<https://doi.org/10.5281/zenodo.6853114>
 30. Doewes, A., **Saxena, A.**, Pei, Y., & Pechenizkiy, M., (2022) Individual Fairness Evaluation for Automated Essay Scoring System. *Proceedings of the 15th International Conference on Educational Data Mining*, 206–216. <https://doi.org/10.5281/zenodo.6853150>
 31. Singh, M., Iyengar, S.R.S., **Saxena, A.** and Kaur, R., 2022. *A Bi-level Assessment of Twitter Data for Election Prediction: Delhi Assembly Elections 2020*. In *Companion Proceedings of the Web Conference 2022 (WWW '22)*. (pp. 930–935).
<https://doi.org/10.1145/3487553.35246732022>
 32. **Saxena, A.**, Pei, Y., Veldsink, J., van Ipenburg, W., Fletcher, G., & Pechenizkiy, M. (2021, November). The banking transactions dataset and its comparative analysis with scale-free networks. In *Proceedings of the 2021 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (pp. 283-296).
<https://doi.org/10.1145/3487351.3488339>
 33. Malhotra, D., Gera, R., & **Saxena, A.** (2021, November). Community Detection Using Semilocal Topological Features and Label Propagation Algorithm. In *International Conference on Computational Data and Social Networks* (pp. 255-266). Springer, Cham.
https://doi.org/10.1007/978-3-030-91434-9_23
 34. **Saxena, A.**, Fletcher, G., & Pechenizkiy, M. (2021, April). How Fair is Fairness-aware Representative Ranking?. In *Companion Proceedings of the Web Conference 2021* (pp. 161-165).
<https://doi.org/10.1145/3442442.3453458>
 35. **Saxena, A.**, Saxena, H., & Gera, R. (2020, December). k-TruthScore: Fake News Mitigation in the Presence of Strong User Bias. In *International Conference on Computational Data and Social Networks* (pp. 113-126). Springer, Cham.

https://doi.org/10.1007/978-3-030-66046-8_10

36. **Saxena, A.**, Hsu, W., Lee, M. L., Leong Chieu, H., Ng, L., & Teow, L. N. (2020, April). Mitigating Misinformation in Online Social Network with Top-k Debunkers and Evolving User Opinions. In *Companion Proceedings of the Web Conference 2020* (pp. 363-370). <https://doi.org/10.1145/3366424.3383297>
37. **Saxena, A.**, Saxena P., Reddy H, & Gera R. (2019) A Survey on Studying the Social Networks of Students. In *The Fifth International Conference on Human and Social Analytics* (pp 50-57). ISBN: [978-1-61208-725-2](https://doi.org/10.1007/978-3-030-04648-4_17)
38. **Saxena, A.**, & Iyengar, S. R. S. (2018, December). K-Shell Rank Analysis Using Local Information. In *International Conference on Computational Social Networks* (pp. 198-210). Springer, Cham. https://doi.org/10.1007/978-3-030-04648-4_17
39. Miller, R., Gera, R., **Saxena, A.**, & Chakraborty, T. (2018, August). Discovering and leveraging communities in dark multi-layered networks for network disruption. In *2018 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)* (pp. 1152-1159). IEEE. <https://doi.org/10.1109/ASONAM.2018.8508309>
40. Saxena, A., & Iyengar, S. R. S. Global Rank Estimation in Complex Networks. *Grad Forum, ICDCN 2018*
41. **Saxena, A.**, Gera, R., & Iyengar, S. R. S. (2017, July). Fast estimation of closeness centrality ranking. In *Proceedings of the 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2017* (pp. 80-85). <https://doi.org/10.1145/3110025.3110064>
42. **Saxena, A.**, Gera, R., & Iyengar, S. R. S. (2017, July). Observe locally rank globally. In *Proceedings of the 2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2017* (pp. 139-144). <https://doi.org/10.1145/3110025.3110063>
43. Gera, R., Miller, R., MirandaLopez, M., **Saxena, A.**, & Warnke, S. (2017, July). Three is the answer: Combining relationships to analyze multilayered terrorist networks. In *2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)* (pp. 868-875). IEEE. <https://doi.org/10.1145/3110025.3110154> (authors in alphabetical order)
44. Adeniji, O., Cohick, D. S., Gera, R., Castro, V. G., & **Saxena, A.** (2017, July). A Generative Model for the Layers of Terrorist Networks. In *2017 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM)* (pp. 690-697). IEEE. ISBN: [978-1-4503-4993-2](https://doi.org/10.1007/978-3-030-66046-8_10) (authors in alphabetical order)
45. **Saxena, A.**, & Iyengar, S. R. S. (2016, January). Evolving models for meso-scale structures. In *2016 8th International Conference on Communication Systems and Networks (COMSNETS)* (pp. 1-8). IEEE. <https://doi.org/10.1109/COMSNETS.2016.7439976>

46. **Saxena, A.**, Malik, V., & Iyengar, S. R. S. (2016, January). Estimating the degree centrality ranking. In *2016 8th International Conference on Communication Systems and Networks (COMSNETS)* (pp. 1-2). IEEE.
<https://doi.org/10.1109/COMSNETS.2016.7440022>
47. Gupta, Y., **Saxena, A.**, Das, D., & Iyengar, S. R. S. (2016). Modeling memetics using edge diversity. In *Complex Networks VII* (pp. 187-198). Springer, Cham.
https://doi.org/10.1007/978-3-319-30569-1_14
48. **Saxena, A.**, Iyengar, S. R. S., & Gupta, Y. (2015, August). Understanding spreading patterns on social networks based on network topology. In *Proceedings of the 2015 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining 2015* (pp. 1616-1617).
<https://doi.org/10.1145/2808797.2809360>

Book Chapters

49. Gera, R., Reith, M., Bartolf, D'M., Tick, S., Singh, P., Mochocki, S., & **Saxena, A.** 2025. Personalizing Learning Through Collaborative Networks Of Knowledge. In M. Carmo (Ed.), *Education Applications & Developments* (Vol. X, pp. 327-340). Lisbon, Portugal: inScience Press. (in press).
50. de Groot, A., Fletcher, G. H. L., van Manen, G., **Saxena, A.**, Serebrenik, A., & Taylor, L. E. M. (Accepted/In press). A canon is a blunt force instrument: data science, canons, and generative frictions. In *Dialogues in Data Power Shifting Response-abilities in a Datafied World* Bristol University Press. (*authors in alphabetical order*)
51. **Saxena A.** (2022) Evolving Models for Dynamic Weighted Complex Networks. In: Biswas A., Patgiri R., Biswas B. (eds) **Principles of Social Networking**. Smart Innovation, Systems and Technologies, vol 246. Springer, Singapore. https://doi.org/10.1007/978-981-16-3398-0_9
52. **Saxena A.**, Reddy H., Saxena P. (2022) Introduction to Sentiment Analysis Covering Basics, Tools, Evaluation Metrics, Challenges, and Applications. In: Biswas A., Patgiri R., Biswas B. (eds) **Principles of Social Networking**. Smart Innovation, Systems and Technologies, vol 246. Springer, Singapore. https://doi.org/10.1007/978-981-16-3398-0_12
53. **Saxena A.**, Reddy H., Saxena P. (2022) Recent Developments in Sentiment Analysis on Social Networks: Techniques, Datasets, and Open Issues. In: Biswas A., Patgiri R., Biswas B. (eds) **Principles of Social Networking**. Smart Innovation, Systems and Technologies, vol 246. Springer, Singapore. https://doi.org/10.1007/978-981-16-3398-0_13
54. **Saxena A.**, Saxena P., Reddy H. (2022) Fake News Detection Techniques for Social Media. In: Biswas A., Patgiri R., Biswas B. (eds) **Principles of Social Networking**. Smart Innovation, Systems and Technologies, vol 246. Springer, Singapore. https://doi.org/10.1007/978-981-16-3398-0_15
55. **Saxena A.**, Saxena P., Reddy H. (2022) Fake News Propagation and

- Mitigation Techniques: A Survey. In: Biswas A., Patgiri R., Biswas B. (eds) **Principles of Social Networking**. Smart Innovation, Systems and Technologies, vol 246. Springer, Singapore. https://doi.org/10.1007/978-981-16-3398-0_16
56. Panchendrarajan, R., **Saxena, A.** (2022). Deep Learning for Code-Mixed Text Mining in Social Media: A Brief Review. In: Hong, TP., Serrano-Estrada, L., Saxena, A., Biswas, A. (eds) Deep Learning for Social Media Data Analytics. Studies in Big Data, vol 113. Springer, Cham. https://doi.org/10.1007/978-3-031-10869-3_3
57. Sharma, T., Panchendrarajan, R., **Saxena, A.** (2022). Characterisation of Mental Health Conditions in Social Media Using Deep Learning Techniques. In: Hong, TP., Serrano-Estrada, L., Saxena, A., Biswas, A. (eds) Deep Learning for Social Media Data Analytics. Studies in Big Data, vol 113. Springer, Cham. https://doi.org/10.1007/978-3-031-10869-3_9
58. Arya, A., Pandey, P. K., **Saxena, A.** (2022). Node Classification Using Deep Learning in Social Networks. In: Hong, TP., Serrano-Estrada, L., Saxena, A., Biswas, A. (eds) Deep Learning for Social Media Data Analytics. Studies in Big Data, vol 113. Springer, Cham. https://doi.org/10.1007/978-3-031-10869-3_1

Under Review/Ready to be Submitted

- **Akrati Saxena**, Harshith Kumar Yadav, Bart Rutten and Shashi Shekhar Jha, DQ4FairIM: Fairness-aware Influence Maximization using Deep Reinforcement Learning (Submitting to TKDE journal)
- Caroline Brasileiro Pena, **Akrati Saxena**, Padraig MacCarron, and David J.P. O’Sullivan. Dynamics of temporal influence on polarised networks (Under Review in Plos One Journal)
- Elze de Vink, Frank W. Takes, and **Akrati Saxena**. Measuring Group Fairness in Community Detection (Under Review in Plos One Journal)
- Mariana Macedo and **Akrati Saxena**. Gender biases in online communication: A case study of Soccer. (Under Review in Applied Intelligence Journal)
- Soumita Das, Anupam Biswas, and **Akrati Saxena**. Modeling Homophily Fusion on Cascading for Overlapping Community Detection in Social Networks (Under Review in Expert Systems with Applications Journal)
- Pratik Gajane, **Akrati Saxena**, Maryam Tavakol, George Fletcher and Mykola Pechenizkiy. Survey on Fair Reinforcement Learning: Theory and Practice. (Submitting to ACM Computing Survey)
- Leyan Wu, **Akrati Saxena**, and Vincent Traag. International Citation and Collaboration Modeling (Submitting to Nature Human Behavior journal)

- T. Ramalingeswara Rao, Pradumn Kumar Pandey, and **Akrati Saxena**. Fraud Rings Detection in Weighted Transaction Networks with Multiple Attributes using Spark GraphFrames (Submitting to AI Journal)
- Elizaveta Kuznetsova, Iliara Vitulano, Martha Stolze, Tomas Nagy, and **Akrati Saxena**. Gender-Specific Communication of European Populist Politicians on X: A Case Study of the Ukraine War (Submitting to Nature Human Behavior journal)
- Shane Mannion, Pdraig MacCarron, **Akrati Saxena**, and Frank W. Takes. Fast degree-preserving rewiring of complex networks

Technical Reports

- Gajane, P., **Saxena, A.**, Tavakol, M., Fletcher, G. and Pechenizkiy, M., 2022. Survey on Fair Reinforcement Learning: Theory and Practice. *arXiv preprint arXiv:2205.10032*.
- Gera, R., **Saxena, A.**, Bartolf, D. M., & Tick, S. (2021). A Network Science Perspective to Personalized Learning. *arXiv preprint arXiv:2111.01321*.
- **Saxena, A.**, & Iyengar, S. (2020). Centrality Measures in Complex Networks: A Survey. *arXiv preprint arXiv:2011.07190*.

Accepted Abstracts / Posters

- "Unveiling Bias in Opinion Models: The Role of Network Structure vs. Demographic Attributes", IC2S2, 2025
- "On Fairness in Opinion Modelling", NetSci, 2025
- "Fast degree-preserving rewiring of complex networks", NetSci, 2025
- "Group Fairness Metrics for Community Detection Methods in Social Networks", NetSci, 2025
- "Fairness Metrics for Community Detection Methods in Social Networks", NetSci-X, 2025
- "Fairness-aware Analysis of Centrality Measures in Social Networks", NetSci-X, 2025
- "Social Influence Maximization and Minimization: A Fairness-aware Perspective", NetSci-X, 2024
- "A faster degree-preserving rewiring algorithm for tuning assortativity values of complex networks", NetSci-X, 2024
- "FairSNA: Algorithmic Fairness in Social Network Analysis", NetSci, 2023
- "Let's Tweet about Soccer? A Gender-centric Question", NetSci, 2023
- "Diverse Link Prediction in Complex Networks", Network Inequality

Satellite, NetSci, 2023

- "FairSNA: Algorithmic Fairness in Social Network Analysis", IC2S2, 2023
- "Gender-based Analysis of Communication Pattern and Emotion Expression: A Case-study of Soccer", IC2S2, 2023
- "Let's Tweet about Soccer? A Gender-centric Question", FRCCS, 2023
- "NodeSim: Node Similarity based Network Embedding for Diverse Link Prediction", Conference on Complex Systems, Palma de Mallorca, Spain, 2022
- "NodeSim: Node Similarity based Network Embedding for Diverse Link Prediction", FRCCS, May 2021
- "Estimating Degree Rank in Complex Networks", IRISS, February 2019
- "Fast and Efficient Methods to Estimate Global Rank of the Nodes Using Network Characteristics", GYSS 2019
- "Estimate Node Ranking using Structural Properties of Real-World Networks" in GHCI 2018
- "Fast and Efficient Methods to Estimate Global Rank of the Nodes using Network Characteristics" in Heidelberg Laureate Forum 2018
- "Observe Locally Rank Globally" in NetSci 2018
- "A Heuristic Approach to Estimate Nodes' Closeness Rank Using the Properties of Real World Networks" for contributed talk in NetSci 2018
- "Enhancing community detection in multiplex networks leveraging its layers' aggregation" in Sunbelt 2016
- "Evolution of Core-Periphery Structure" in NAG15 international workshop held at IIT Ropar, December 2015
- "Evolution of Core-Periphery Structure in Complex networks" in Cynosure at IIT Ropar, November 2015
- "Predict the Degree Centrality Ranking" in Cynosure at IIT Ropar, November 2015

Presentations and Talks

- "Algorithmic Fairness in Social Network Analysis: FairSNA", Network day, Utrecht, Netherlands, June 2025 (*Invited Talk*)
- "Algorithmic Fairness in Social Network Analysis: FairSNA", Mehta Family School of Data Science and Artificial Intelligence, IIT Roorkee, India, Dec 2024 (*Invited Talk*)
- "Algorithmic Fairness in Social Network Analysis: FairSNA", Department of AI, Wroclaw University of Science and Technology, Poland. November 2024 (*Invited Talk*)
- "Algorithmic Fairness in Link Prediction on Complex Network", 2nd

International FDP on AI at Techno International Batanagar, Kolkata, India, 8th January, 2024 (*Keynote Talk*)

- "Algorithmic Fairness in Social Network Analysis", YAL Interfaculty Lunch on Biases at Leiden University, 31st October, 2023 (*Keynote Talk*)
- "Social Influence Spread: A Fairness-aware Perspective", Social Influence Analysis, Lorentz Center Workshop, September, 2023 (*Keynote Talk*)
- "FairSNA: Algorithmic Fairness in Social Network Analysis", NetSci, 2023
- "Diverse Link Prediction in Complex Networks", Network Inequality Satellite, NetSci, 2023
- "Fairness-aware Link Prediction in Social Networks", at LCN2 seminar series, Leiden University, the Netherlands, Feb 2023
- "Diverse Link Prediction in Complex Networks: SNA", at LIACS, Leiden University, the Netherlands, Feb 2023
- "NodeSim: Node Similarity based Network Embedding for Diverse Link Prediction", at CCS Conference, Palma de Mallorca, Oct 2022
- "Fairness in Social Network Analysis", at the Chair of Computational Social Science, TUM, Germany, July 2022 (*Invited Talk*)
- "Generative friction: exploring conceptual points of contact between computing sciences, social sciences and philosophy", at Data Power Conference, Bremen Germany, June 2022 (*Invited Keynote Talk*)
- "The banking transactions dataset and its comparative analysis with scale-free networks", at the Network Architectures and Services Group, Quantum and Computer Engineering Department in the faculty of Electrical Engineering, Mathematics and Computer Science (EEMCS), Delft University of Technology, Netherlands, March 2022 (*Invited Talk*)
- "Fair Link Prediction Methods in Complex Networks", at Faculty Development Programme (FDP) on 'Research Scopes in Data Science, Analysis, and Visualisation' organized by PSG Center for Academic Research and Excellence, India, October 2021 (*Invited Talk*)
- "Link Prediction: Theory and Applications", at Faculty Development Programme (FDP) on 'Network Science: Theory, Challenges and Applications' organized by Amity University Rajasthan, Jaipur, India, August 2021 (*Invited Talk*)
- "NodeSim: Node Similarity based Network Embedding for Diverse Link Prediction", at FRCCS, May 2021
- "How fair is Fairness-aware Representative Ranking?", at DSSGW, The Web Conference, April 2021
- "k-TruthScore: Fake News Mitigation in the Presence of Strong User Bias", at CSoNet, December 2020
- "Mitigating Misinformation in Online Social Network with Top-k

Debunkers and Evolving User Opinions", at The Web Conference, April 2020

- "K-shell Rank Analysis using Local Information", at CSoNet, Shanghai, China, December 2018
- "Fast and Efficient Methods to Estimate the Centrality Rank of the Nodes in Complex Networks", at IIT Ropar, India, August 2018
- "Fast and Efficient Methods to Estimate Global Rank of the Nodes using Network Characteristics", at IIT Ropar, India, May 2018
- "Global Rank Estimation in Complex Networks" in ICDCN 2018, IIT BHU, India, January 2018
- "Rank me, thou shalln't compare me: Rank estimation in complex networks", at IIT Ropar, India, December 2017
- "Estimate Closeness Centrality Rank using its Structural Behavior", at IIT Ropar, India, September 2017
- "Rank me thou shan't Compare me" at CSE department, IIT Ropar, India, October 2016
- "Behavioral Economics" at IIT Ropar, India, June 2016
- "Evolving Models for Meso-Scale Structures" in Comsnets at Bangalore, India, January 2016
- "Estimating the Degree Centrality Ranking" in Comsnets at Bangalore, India, January 2016
- "Evolution of Core-Periphery Structure" in NAG15 international workshop held at IIT Ropar, December 2015
- "Evolution of Core-Periphery Structure in Complex networks" in Cynosure at IIT Ropar, November 2015
- "Predict the Degree Centrality Ranking" in Cynosure at IIT Ropar, November 2015
- "Evolving Phenomenon of Core in Real World Networks" at CSE Department IIT Ropar, August 2015
- "Synonymy Networks and Their Structure" at CSE Department IIT Ropar, January 2015
- "Virality Prediction in Online Social Networks: A Novel Approach" in TEQIP-II at PEC Chandigarh , November 2014

Teaching

Lecturer

- Software Development, Spring Semester 2023, 2024, 2025, Leiden University, Netherlands
- Complex Networks, Spring Semester 2024, 2025 Leiden University, Netherlands

- Network Science Project course in *Network Science for a Connected Society* minor, Spring Semester 2025 Leiden University, Netherlands
- JM0150, Data Mining, (Fall 2022, Data Science and Entrepreneurship master at JADS, Netherlands)
- JM0150, Data Mining, co-taught with Dr. Joaquin Vanschoren (Fall 2021, Data Science and Entrepreneurship master at JADS, Eindhoven University of Technology, Netherlands)
- 2IMM00, Seminar Data Mining course, (Q2, Nov 2021 - Jan 2022, Eindhoven University of Technology, Netherlands)
- JBP000 Final Bachelor Project, (Aug 2021 - Jan 2022, Eindhoven University of Technology, Netherlands)

Teaching Assistantships

- JBG040, Data Challenge 1 with Dr. Maryam Tavakol (Q2, Nov 2021 - Jan 2022, Eindhoven University of Technology, Netherlands)
- Foundations of AI course with Dr. Cassio De Campos (December 2020, Eindhoven University of Technology, Netherlands)
- GE103, Introduction to Programming and Data Structures with Dr. Nitin Auluck (Spring Semester, 2018, Indian Institute of Technology Ropar)
- CSL720, Introduction to Spatial Computing with Dr. Venkata M. Viswanath Gunturi (Autumn Semester, 2018, Indian Institute of Technology Ropar)
- CSL811, Special Topics in Social Computing with Dr. S.R.S. Iyengar (Autumn Semester, 2018, Indian Institute of Technology Ropar)
- CSL471, Introduction to Probability and Computing with Dr. S.R.S. Iyengar (Spring Semester, 2017, Indian Institute of Technology Ropar)
- CSL343, Computer Networks with Dr. Junghyun Jun (Autumn Semester, 2017, Indian Institute of Technology Ropar)
- CSL356, Analysis and Design of Algorithms with Dr. Junghyun Jun (Spring Semester, 2016, Indian Institute of Technology Ropar)
- CSL343, Computer Networks with Dr. Junghyun Jun (Autumn Semester, 2016, Indian Institute of Technology Ropar)
- CSL469, Wireless and Mobile Systems with Dr. Junghyun Jun (Spring Semester, 2015, Indian Institute of Technology Ropar)
- CSL451, Introduction to Database Systems with Dr. Narayanan C. Krishnan (Autumn Semester, 2015, Indian Institute of Technology Ropar)
- GEL103, Introduction to Computing with Dr. Nitin Auluck (Autumn Semester, 2015, Indian Institute of Technology Ropar)
- CSL407, Machine Learning with Dr. Narayanan C. Krishnan (Spring Semester, 2014, Indian Institute of Technology Ropar)

**Thesis
Supervised**

PhD Students

1. Fabrizio Corriera (Jan 2025 -)
2. Maarten Hoeneveld (Sep 2025 -)
3. Ella Has (Nov 2025 -)
4. Stanisława Stępnia (Co-supervised with Prof. Dr. Radosław Michalski) (1.10.2023 -)
5. Mukesh Kumar (co-supervised with Dr. Gaurav Dixit) (2024 -)
6. Kirtidev Mohapatra (Co-supervised with Dr. Rishi R. Singh) (2024 -)
7. Harshith Kumar Yadav (2024 -)
8. Snehasish Samanta (July 2025 -)
9. Shikha Mallick, UViC Canada (co-supervised with Prof. Alex Thomo, UviC) (August 2025 -)

Visiting PhD/Sub-project Supervision

10. Hanshu Yu (2023-2024)
11. Amit Singh Yadav (Co-supervised with Dr. Chandresh K. Maurya) (2024 - 2025)
12. Ricky Fazri (2021-2023)
13. Afrizal Doewes (2021-2023)
14. Carolina Pena (2024)
15. Leyan Wu (2023-2024)
16. Anju Bhuiya (2024 -)
17. Vishal Sharma (2023 - 2025)

Masters Theses Supervised

1. Cristina G. Bierbooms, *Fairness-aware Influence Blocking Maximization for Combating Fake News*, Co-supervised with Prof. Dr. Mykola Pechenizkiy, (Mar 2022 - Sep 2022, defended)
2. Bart Rutten, *Learning a Fair Policy for the Influence Maximization Problem*, Co-supervised with Prof. Dr. Mykola Pechenizkiy, (Mar 2022 - Sep 2022, defended)
3. Rens Oostenbach, *Fairness-aware Analysis of Community Detection*, Co-supervised with Prof. Dr. George Fletcher (Aug 2022 - Apr 2023, defended)
4. Deepthy Unnikrishnan, *Fairness in Negative Influence Minimization in Social Networks*, Co-supervised with Prof. Dr. Mykola Pechenizkiy (Jan 2023 - Aug 2023, defended)
5. Bogdan Aioanei, *Network-aware vs. network-agnostic flight delay propagation in airport networks*, Co-supervised with Dr. Frank Takes (Feb - Aug 2023)

6. Emilio Sánchez Olivares, *An empirical analysis of transfer learning for link prediction in real-world networks*, Co-supervised with Dr. Frank Takes and H. D. Boekhout (Feb - Aug 2023, defended)
7. Diego van Egmond, *Feature-blind Approach for Fair Influence Minimization*, Co-supervising with Dr. Frank Takes (defended, May 2024)
8. Elze De Vink, *Community Detection Method*, Second reader: Dr. Frank Takes (defended, Nov 2024)
9. Bob van Beek, *Analysis of Network-based Games*, Co-supervised with Dr. Frank Takes (defended, Nov 2024)
10. Lars Ruigrok, *Polarity Marking Dutch Parse Trees* (Completed 2024) (First supervisor: Gijs Wijnholds, Second reader: Akрати Saxena)
11. Ray Sun, *Analysing Static Tracker Detection: Comparative Insights into Protocol-based HTTP Response and Graph Topology* (defended, Aug 2025)
12. Wouter Burg, *Fair Sampling in Hyperedge Networks* (Ongoing)
13. Fabian Jennrich, *Fairness-aware Analysis of Network Anonymization Techniques* (Ongoing)
14. Amber van den Broek, *Algorithmic Fairness in Social Network Analysis* (Ongoing)
15. Daniel Gelencsér, *Web-tracking dynamics of Global and Local Trackers* (Ongoing)

Bachelor Theses Supervised

1. Giel Beuzel, *Domain-Specific Social Network Expansion: An unsupervised community expansion strategy using heuristic methods*, Co-supervised with Prof. Dr. Mykola Pechenizkiy, Jul 2021 - Jan 2022
2. Zoe Abhelakh, *Uncovering Influential Artists and Musical Communities in an Artist Co-Follower Network*, Co-supervised with Dr. Frank Takes (Jan 2023 - July 2023)
3. Anna Steenbergen, *Unravelling the Connections Between CEO's Online Social Networks and Firm Innovation: An X-Based Analysis*, Co-supervised with Dr. Miros Zohrehvand (defended, July 2024)
4. Seyidali Bulut, *How much alike are we to one another? Analyzed with online footprints*, (defended, August 2024)
5. Christos Georghiou, *Topology of Decentralized Social Networks: A Case*

Study of Bluesky, (defended, July 2025)

6. Ashraf El Madkouki, Web Privacy in the Netherlands: A Study of Tracker Dynamics, (defended, August 2025)
7. Olof Tijs, Analyzing Communication on Bluesky: Sentiment, Emotion, and Toxicity in Dutch Political Discourse, (defended, August 2025)

– Additionally I have supervised 50+ bachelor and master student interns during my research career.

**Research
Collaborations
(active)**

Copenhagen University, Denmark; University of Victoria, Canada; WUST, Poland; Weizenbaum Institute, Germany; IIT Roorkee, India; IIT Bhilai, India; IIT Kharagpur, India; IIT Ropar, India; IIT Bombay, India; Naval Postgraduate School, USA; University of South Florida, USA; Northeastern University, UK; University of Zurich, Switzerland; University College Dublin, Ireland; University of Limerick, Ireland

**Professional
Activities**

Edited Books

- Co-edited *Deep Learning for Social Media Data Analytics* book, [Studies in Big Data](#), Springer book series.
Editors: Prof. Dr. Tzung-Pei Hong, Dr. Leticia Serrano Estrada, Dr. Akрати Saxena, Dr. Anupam Biswas. (More details: <https://link.springer.com/book/10.1007/978-3-031-10869-3>)

Tutorials

- *Homophily in Complex Networks: Measures, Models, and Applications* tutorial at ASONAM 2025 conference
(More details: <https://sites.google.com/view/hcn-tutorial/>)
- *Roles Analytics in Networks - Foundations, Methods and Applications* tutorial at ICDM 2021 conference
(More details: <https://cswzhang.github.io/icdm-tutorial-2021/>)
- *Network Science Applications to Education in the 21st Century* tutorial at ASONAM 2021 conference
(More details: <https://sites.google.com/view/asonam-tutorial-2021/>)

Conference/Symposium/Special Tracks/Satellites/Workshops

- *Networks in Science of Science (NetSciSci)* thematic session satellite at NetSciX 2026, Auckland, New Zealand (co-organized with Dr. Yian Yin, Cornell University, Dr. Yukie Sano, University of Tsukuba, Dr. Gaurav Dixit, IIT Roorkee, India)

- ***Algorithmic Fairness in Network Science (FairNetSci)*** satellite at NetSciX 2026, Auckland, New Zealand (co-organized with Dr. Frank Takes) <https://fairnetsci.github.io/>
- ***Government Policies and Scientific Collaboration (GPSC)*** Symposium 2025, Leiden, the Netherlands
- ***Networks in Science of Science (NetSciSci)*** satellite at NetSci 2025, Maastricht, Netherlands (co-organized with Dr. Sarah Bratt and others)
- ***Algorithmic Fairness in Network Science (FairNetSci)*** satellite at NetSci 2025, Maastricht, Netherlands (co-organized with Prof. Fariba Karimi) <https://fairnetsci.github.io/>
- ***Role Acquisition and Modeling (RAM)*** at CSoNet 2019 conference (co-organized with Prof. Dr. Raluca Gera)

Educational Workshops

- Organizer at TED Your Ideas workshop on Technical Writing and Presentation skills, IIT Ropar, India, March 2018
- Organizer at Social Network Analysis with Python workshop, AKTU University, Lucknow, India, February 2018

Research Grants

Accepted Proposals:

1. **Title:** *FairEmb: Fairness-aware Embedding Frameworks for Real-world Network Data*
Role: PI
Strategic grant Leiden University, Netherlands, 2025, € 300,000
2. **Title:** *Modeling and Analysis of Complex Networks with Structural Inequalities*
Role: PI, PIs: Dr. Akрати Saxena and Dr. Moritz Otto,
Strategic grant Leiden University, Netherlands, 2024, € 300,000
3. **Title:** *The Impact of Affirmative Actions on International Academic Collaboration*
Role: PI
KIEM Grant 2023, € 10,000
Grant reference number: KIEM-2023-38
4. **Title:** *Modeling the Impact of Affirmative Actions in Scientific Collaboration*
Role: PI
Partners: Dr. Rodrigo Costas Comesaña (CWTS, Leiden University, the

Netherlands), Dr. Vincent Traag (CWTS, Leiden University, the Netherlands), Dr. Deepak Ajwani (University College Dublin, Ireland), Dr. Alexandre Bovet (University of Zurich, Switzerland) and Dr. Francesco Tudisco (The University of Edinburgh, UK)
Una-Europa-Kiem Grant Call, 2025, € 15,000

Academic Services

PhD Defence Committee Member

- Gerrit-Jan de Bruin, Network analysis methods for smart inspection in the transport domain, 16 Nov 2023, Leiden University
- Ricky Maulana Fajri, Towards Safer Active Learning: Dealing with Unwanted Biases, Graph-Structured Data, Adversary, and Data Imbalance, 4 Feb 2025, TU/e, Netherlands (Phd Advisor)

Associate Editor (Journals)

- Social Network Analysis and Mining (2024 -)
- PLOS Complex Systems (2024 -)

Area Chair

- ECAI- 2024

Technical Program Committee Member

- Technology, Engineering, Management for Societal Impact using Marketing, Entrepreneurship, and Talent (TEMSMET) - 2025
- Complex Networks 2024
- ECAI - 2024, 2025
- Symposium on Intelligent Data Analysis (IDA) 2023, 2024, 2025
- International Conference on Intelligent Computing Systems and Applications (ICICSA 2022) (<http://icicsa.nits.ac.in/>)
- International Conference on Computational Data & Social Networks (CSoNet) 2019, 2021, 2022, 2023
- RESPECT (Research in Equity and Sustained Participation in Engineering, Computing, and Technology) 2020
- International Conference on Cyber Security and Computer Science (ICONCS 2020)
- IEEE International Conference on Artificial Intelligence and Information Systems (ICAIS 2020)
- International conference on contemporary Computing and Informatics

(iC3I 2019)

- CSS Summer School on Methods for analyzing and modeling multimedia data, 2019
- Role Acquisition and Modeling (RAM) Special Track @ CSoNet 2019

Reviewed Journals (regularly)

- International Journal of Data Science and Analytics
- International Journal of Information Management Data Insights
- Data Mining and Knowledge Discovery
- Plos One
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Emerging Topics in Computational Intelligence
- Journal of Combinatorial Optimization
- Applied Network Science
- GeoInformatica
- IEEE Transactions on Network Science and Engineering
- International Journal of Data Science and Analysis
- Post-ASONAM Edited Book
- International Journal of Modern Physics B

Reviewed Conferences

- ICWSM 2024 (Poster and Dataset Track)
- Data Science Track @ GHC 2019
- Poster Track @ GHC 2019
- TAPIA Conference, 2019
- International Conference on Artificial Intelligence and Information Systems (ICAIIS 2019)
- Networks and Education track @ HUSO 2019

Travel Grants

- Travel funds by Google to attend CSONET 2018 in Shanghai, China
- Travel Grant by GHCI to attend GHCI 2018
- Travel Grant by Heidelberg Laureate Foundation to attend Heidelberg Laureate Forum 2018
- Travel Grant to attend Summer School on Computational Social Science 2018 in University of Southern California, USA
- Travel Grant by Google to attend Google I/O 2018
- Travel Grant by Google to attend IWD Summit 2018 @ Google Office, Bangalore
- Travel Grant by ICDCN to attend ICDCN 2018 conference in India

- Travel Grant by Google to attend GHCI 2017
- Travel Grant by Google to attend Google Women Techmaker Scholarship Retreat at Seoul, South Korea 2017.
- Travel Grant by COMSNETS to attend COMSNETS 2016 conference in India.

**Academic
Achievements
and Awards**

- Received **Young Achiever Award** from IBAE-2019.
- Invited to attend **Global Young Scientists Summit (GYSS)**, Singapore, January 2019.
- **GHCI18 Scholar** by GHCI, India, 2018.
- **HLF Young Researcher** by **Heidelberg Laureate Forum**, Germany, September 2018.
- Invited by Google WTM to attend **Google I/O 2018**.
- **Google Scholar** under **Google Women Techmakers Scholarship**, APAC, 2017.
- Won **First runner-up Best presenter Award** for "Estimating the Degree Centrality Ranking" presentation in Grad Forum, Comsnets 2016.
- Won **First runner-up** prize for "Virality Prediction in Online Social Networks: A Novel Approach" poster presentation in TEQIP- II 2014 at PEC Chandigarh, India.
- **Sun Certified Java Programmer** (SCJP 1.6) certification from ORACLE.
- Aptech certified **C Programmer**.
- I topped my district among girls in secondary and higher secondary.