

Dr. Shivam Gupta

Postdoctoral Researcher (IISc) | PMRF Fellow (IIT ROPAR) | Ph.D (CSE)

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RESEARCH INTERESTS

- Fairness in Machine Learning • Deep Learning • Clustering • Recommender Systems
- Explainable AI • Reinforcement Learning • Federated Learning • Game Theory
- Privacy Preservation • Theoretical ML • Facility Location • Online Algorithms

EDUCATION

INDIAN INSTITUTE OF TECHNOLOGY ROPAR | Direct Ph.D (CSE)

September 2020 – April 2025 | Punjab, India

- **Supervisor:** Dr. Shweta Jain, Head, Indo-Taiwan Joint Research Centre on AI & ML.
- **Thesis Title:** Fair Algorithms for Clustering and Recommender Systems.
- **Thesis Defense Date :** 21/04/2025
- **Coursework:** Machine learning (ML), Maths for ML, Game Theory, Social Networks, Topics in Artificial Intelligence, Reinforcement Learning, Data Structures & Algorithms.
- **CGPA:** 8.75/10.0

INDIAN INSTITUTE OF INFORMATION TECHNOLOGY SONEPAT | B.Tech (IT) (Mentor & Campus NIT Kurukshetra) | August 2016 – May 2020 | Haryana, India

- **B.Tech Advisor:** Dr. Virender Ranga **CGPA:** 9.62/10.0 (Rank 1)

EXPERIENCE

POSTDOCTORAL RESEARCH SCIENTIST | INDIAN INSTITUTE OF SCIENCE (IISc), INDIA

April 2025 – Current | Walmart Center for Tech Excellence, CSA, IISc, India | Assoc. Prof. (Dr.) Siddharth Barman

TEACHING ASSISTANT | INDIAN INSTITUTE OF TECHNOLOGY ROPAR, INDIA

September 2020 – April 2025 | Punjab, India

Courses: Introduction to Computing and Data Structures, Data Mining, Game Theory, Mathematical Foundation of CS, Algorithmic Game Theory and Topics in Artificial Intelligence, Machine Learning.

GUEST LECTURER | GURU NANAK DEV ENGINEERING COLLEGE, LUDHIANA, INDIA

Jan 2022 – May 2025 | PMRF Teaching Deliverable on Courses such as ML, Python, OOPs, Responsible AI etc.

CERTIFIED TRAINEE | AURIBISES TECHNOLOGIES PVT. LTD., LUDHIANA, INDIA

May - July 2018 | Python & Machine Learning | May – July 2017 | Java EE | May – July 2016 | Android Application

BACKEND DEVELOPER | GRAPHICS ANDROID WEB DEVELOPMENT SQUAD (GAWDS)

Sep 2016 - July 2020 | NIT Kurukshetra, Haryana, India

PROFESSIONAL SERVICES & ACHIEVEMENTS

EDITORIAL TEAM MEMBER

LatIa Journal - AI's Theoretical Foundations & Practical Applications Journal. [Webpage]

REVIEWER • Neural Networks (Elsevier) • Computers & Electrical Engg. (Elsevier)

- Journal of Super Computing (Springer) • Computer in Biology & Medicine (Elsevier)
- Inteligencia Artificial • ECML-PKDD 2022 Conference • IJCAI 2023 • ECAI 2024.

EXAMINATION Cleared Joint Entrance Examination (JEE) Mains 2016. School Topper

in Mathematics Senior Secondary Examination conducted by CBSE.

SKILLS

PROGRAMMING

- C/C++ • Java • Python • JavaEE
- MySQL • Android • HTML / CSS
- Linux • L^AT_EX • Spring • Node.js
- Hibernate • Tensorflow • Pytorch
- Javascript • jQuery • php

TOOLS/PLATFORMS

- Github • Overleaf • Heroku
- Google Dialog Flow (api.ai)
- Google Firebase

HONORS

BEST PAPER AWARD

CONFERENCE ON DEPLOYABLE AI
2022 | RBCDSAI-FCAI, IIT Madras, India
Efficient Algorithms for Fair
Clustering with a New Fairness
Notion.

BEST PAPER AWARD

INTERNATIONAL CODS-COMAD
2024 | IIIT Bangalore, India
Online Algorithm for Clustering with
Capacity Constraints (Runner's Up).

SELECTED FOR ACM PINGALA INTERACTIONS IN COMPUTING

RESEARCH NETWORKING EVENT
2024 | IIIT Bangalore, India
One of 45 stellar participants
(Heidelberg Laureate Concept).

INTERNATIONAL TRAVEL GRANT

SERB, GOVERNMENT OF INDIA
European Conference on AI (ECAI) 2023

INDOML TRAVEL GRANT AWARD

INDIAN SYMPOSIUM ON ML
2022/2023 | IIT Gandhinagar/Bombay, India

ACML STUDENT SCHOLARSHIP

ASIAN CONFERENCE ON ML
2022 | IIT Hyderabad, India

GATE 2020 (CS) QUALIFIED

Score 562 | All India Rank 2562

PASSED CAMBRIDGE ESOL TEST

UNIVERSITY OF CAMBRIDGE, UK
Preliminary (2011) and Key English Test (2010)

YEAR-WISE SELECTED PUBLICATIONS

CONFERENCES/JOURNALS

- [C1.] Vummintala, A. M., **Shivam Gupta**, Jain, S., and Gujjar, S. Flight: A unified framework for symmetric and asymmetric welfares for facility location. International Conference on Autonomous Agents and Multiagent Systems (2025). **(CORE A* Conference)**.
- [C2.] **Shivam Gupta**, Jain, S., Krishnan, N. C., Ghalme, G., and Hemachandra, N. Capacitated online clustering algorithm. European Conference on Artificial Intelligence (ECAI) (2024). **(CORE A Conference, Offline Spain)** [Link]
- [C3.] **Shivam Gupta**, Jain, S., Krishnan, N. C., Ghalme, G., and Hemachandra, N. Online algorithm for clustering with capacity constraints. In Joint International Conference on Data Science & Management of Data (CODS-COMAD) (2024). **(Best Paper Award, Runner's Up) (Offline Bangalore, India)**. [Link]
- [C4.] Chakraborty, R., Halder, C., Roy, K., **Shivam Gupta**, and Jha, S. S. Msbnnet: Handwritten bangla character recognition using lightweight multi-scale cnn architecture. In Joint International Conference on Data Science & Management of Data (CODS-COMAD) (2024).
- [J1.] Ghosh, S., Deepti, and **Shivam Gupta**. Brainmnet: a unified neural network architecture for brain image classification. Network Modeling Analysis in Health Informatics and Bioinformatics 13:11, 1 (2024). **(Impact Factor 3.4, H-Index: 23)**. [Link]
- [J2.] Ghosh, S., Deepti, and **Shivam Gupta**. Epilconnet: A novel multi-class epileptic seizure classification model. Inteligencia Artificial 27, 74 (2024). **(Impact Factor 2.0, H-Index: 14)**. [Link]
- [J3.] **Shivam Gupta**, Ghalme, G., Krishnan, N. C., and Jain, S. Efficient algorithms for fair clustering with a new notion of fairness. Data Mining and Knowledge Discovery (2023), 1–39. **(Impact factor 5.406, H-Index: 117, Q1 Journal, CORE A)**. [Link]
- [C5.] **Shivam Gupta**, Ghalme, G., Krishnan, N. C., and Jain, S. Group fair clustering revisited – notions and efficient algorithm. International Conference on Autonomous Agents and Multiagent Systems (2023). **(CORE A* Conference, Offline London)**.
- [J4.] **Shivam Gupta**, Kaur, K., and Jain, S. : Improved matrix factorization for mitigating popularity bias in recommender systems. Journal of Intelligent Information Systems 62, 2 (2023), 509–534. **(Impact Factor 3.4, H-Index: 64)**. [Link]
- [C6.] Makkar, J., Bhumika, Jain, S., and **Shivam Gupta**. MFC: A multishot approach to federated data clustering. European Conference on Artificial Intelligence (ECAI) (2023). **(CORE A Conference, Offline Poland)** [Link]
- [C7.] Singh, M., Kancheti, S. S., **Shivam Gupta**, Ghalme, G., Jain, S., and C. Krishnan, N. Algorithmic recourse based on user's feature-order preference. In Joint International Conference on Data Science & Management of Data (CODS-COMAD) (2023). [Link]
- [C8.] **Shivam Gupta**, Ghalme, G., Krishnan, N. C., and Jain, S. Efficient algorithms for fair clustering with a new notion of fairness. Conference on Deployable AI, RBCDSAI-FCAI, IIT Madras (2022). **(Best Paper Award)**.
- [J5.] Chowdhury, R. R., **Shivam Gupta**, and Chede, S. World war iii analysis using signed social networks. Social Network Analysis and Mining 11 (2021), 1–16. **(Impact factor 3.87, H-Index: 48, Q1 Journal) (Equal Contribution)**. [Link]

BOOK CHAPTERS/WORKSHOPS

- [B1.] **Shivam Gupta**, Jain, S., Ghalme, G., Krishnan, N. C., and Hemachandra, N. Group and individual fairness in clustering algorithms. In Ethics in Artificial Intelligence: Bias, Fairness and Beyond. Springer, 2023.
- [W1.] **Shivam Gupta**, Ghalme, G., Krishnan, N. C., and Jain, S. Group fair clustering revisited – notions and efficient algorithm. Workshop on Games, Agents and Incentives (GAIW), AAMAS (2023). **(CORE A* Conference, Offline London)**.

UNDER SUBMISSION

- [C9.] **Shivam Gupta**, Vummintala, A. M., Jain, S., and Gujjar, S. Balancing fairness, efficiency and stability in facility location: A nash welfare solution. **(Under Submission)**.
- [J6.] **Shivam Gupta**, Wangzes, T., Tarushi, and Jain, S. Fair federated data clustering through personalization: Bridging the gap between diverse data distributions. arXiv:2407.04302 (2024). **(Under Submission)**.

OTHER SYMPOSIUMS/ WORKSHOPS/ CERTIFICATIONS

- 2024:** • Attended Game Theory, Mechanism Design, and Artificial Intelligence Symposium (**GAME ARTS**) at Indian Institute of Sciences (IISc) Bangalore.
- 2023:** • Attended Indian Symposium on Machine Learning (**IndoML**) 2023 at IIT Bombay, India.
- 2022:** • Attended Indian Symposium on Machine Learning (**IndoML**) 2022 at IIT Gandhinagar, India.
• Attended Asian Conference on Machine Learning (**ACML**) 2022 at ISB Hyderabad, India.
- 2021:** • Attended Indian Symposium on Machine Learning (**IndoML**) 2021 (Online).
• Got shortlisted to attend online **Google Research Symposium** 2021 for Ph.D students in the Asia-Pacific region.
- 2020:** • Completed Data Analysis with Python: Zeros to Pandas course by Jovian.ml, ATAL FDP on Data Sciences, Blockchain and Quantum Computing.
• Attended a 5-day workshop on Blockchain and NLP using Python.

REFERENCES

- **Dr. Shweta Jain**, Head Indo-Taiwan Joint Research Centre on AI & ML & Asst. Professor (CSE), IIT Ropar, India. ✉ shwetajain@iitrpr.ac.in
- **Dr. Nandyala Hemachandra**, Professor, IIT Bombay, India. ✉ nh@iitb.ac.in
- **Dr. Narayanan C Krishnan**, Head, Department of Data Science and Associate Professor, IIT Palakkad, India. ✉ ckn@iitpkd.ac.in
- **Dr. Ganesh Ghalme**, Head, Department of Artificial Intelligence and Asst. Professor, IIT Hyderabad, India. ✉ ganeshghalme@ai.iith.ac.in
- **Dr. Sujit Gujar**, Associate Professor, Indian Institute of Information Technology Hyderabad, India. ✉ sujit.gujar@iiit.ac.in