Bhisham Dev Verma — Curriculum Vitae

Research Interests

Scalable Algorithms for Data Science, Dimension Reduction/Sketching Algorithms, Randomized Numerical Linear Algebra, Soft Computing and Machine Learning.

Work Experience

Postdoctoral Research Associate *August 2024 -*
Wake Forest University,
Winston-Salem, North Carolina, United States.

Education

Ph.D. Scholar *February 2019 - June 2024*
Indian Institute of Technology Mandi,
Himachal Pradesh, India.
Thesis: Improving Sketching Algorithms via Statistical Variance Reduction Techniques

Master of Science in Applied Mathematics *August 2016 - June 2018*
Indian Institute of Technology Mandi,
Himachal Pradesh, India.
Thesis: Practical Portfolio Optimization Using Heuristic Techniques

Bachelor of Science (B.Sc.) *August 2012 - June 2015*
Himachal Pradesh University, Shimla, India.

Journal Publications

1. *Faster and Space Efficient Indexing for Locality Sensitive Hashing.* **Bhisham Dev Verma** and Rameshwar Pratap. Accepted in the Theoretical Computer Science (TCS) journal, 2025.
2. *Credibilistic skewness of LR power fuzzy numbers with applications in portfolio selection.* Pawan Kumar Mandal, **Bhisham Dev Verma**, Manoj Thakur and Garima Mittal. *Applied Intelligence 55, 839 (2025).*
3. *Improving LSH using Tensorized Random Projection.* **Bhisham Dev Verma** and Rameshwar Pratap. *Acta Informatica 62.1 (2025): 1-35.*
4. *An ant interaction scheme-based wrapper strategy for hyperspectral band selection.* Kamal Deep, **Bhisham Dev Verma**, and Manoj Thakur. *Infrared Physics & Technology (2025): 105726.*
5. *Improving Compressed Matrix Multiplication using Control Variate Method.* **Bhisham Dev Verma**, Punit Pankaj Dubey, Rameshwar Pratap and Manoj Thakur. *Information Processing Letters (2024): 106517.*
6. *Sparsifying Count Sketch.* **Bhisham Dev Verma**, Rameshwar Pratap and Punit Pankaj Dubey. *Information Processing Letters (2024): 106490.*
7. *Unbiased Estimation of Inner Product via Higher Order Count Sketch.* **Bhisham Dev Verma**, Rameshwar Pratap and Manoj Thakur. *Information Processing Letters 183 (2023): 106407.*
8. *Variance reduction in Feature Hashing using MLE and Control Variate Method.* **Bhisham Dev Verma**, Rameshwar Pratap and Manoj Thakur. *Machine Learning 111.7 (2022).*
9. *Efficient Binary Embedding of Categorical Data.* **Bhisham Dev Verma**, Rameshwar Pratap and Debajyoti Bera. *Data Mining and Knowledge Discovery 36.2 (2022): 537-565.*
10. *Dimensionality Reduction for Categorical Data.* Debajyoti Bera, Rameshwar Pratap, and **Bhisham Dev Verma**. *IEEE Transactions on Knowledge and Data Engineering (2021).*

11. *QUINT: Node embedding using network hashing.* Debajyoti Bera, Rameshwar Pratap, **Bhisham Dev Verma**, Biswadeep Sen and Tanmoy Chakraborty. *IEEE Transactions on Knowledge and Data Engineering (2021).*
12. *Parallel multi-agent real-coded genetic algorithm for large-scale black-box single-objective optimisation.* Andranik S. Akopov, Levon A. Beklaryan, Manoj Thakur, and **Bhisham Dev Verma**. *Knowledge-Based Systems 174 (2019): 103-122.*

Conference Publications

13. *Improving Sign-Random-Projection via Count Sketch.* Punit Pankaj Dubey, **Bhisham Dev Verma**, Rameshwar Pratap, and Keegan Kang. *In the 38th Conference on Uncertainty in Artificial Intelligence (UAI), pages 599-609, 2022.*
14. *Improving Tug-of-War sketch using Control-Variates method.* Rameshwar Pratap, **Bhisham Dev Verma**, and Raghav Kulkarni. *In the SIAM Conference on Applied and Computational Discrete Algorithms (ACDA21), pages 66-76, 2021.*

Teaching Experience

- Teaching Assistant at IIT Mandi in Applied Mathematical Programming (Aug-Dec 2023), Probability & Statistics (Feb-July 2023), Computational Financial Modelling (Feb-July 2022, Aug-Dec 2020), Matrix Computations for Data Science (Aug-Dec 2021), Statistical Foundations of Data Science (Feb-July 2021), Programming Practicum (Feb-July 2020), Data Science 1 (Aug-Dec 2019), Optimization Techniques (Feb-June 2019).

Conference Talks

- *"Improving Tug-of-War sketch using Control-Variates method"* at SIAM Conference on Applied and Computational Discrete Algorithms (ACDA21), July, 2021.

Workshop & Summer schools

- Attended Workshop on Algorithms under Uncertainty (16-17 Dec 2022) organised by the Department of Computer Science and Engineering, Indian Institute of Technology Madras, Chennai, India.
- Attended Research Week with Google organised by Google Research India, Feb 8-11, 2022.
- Attended Google Research India Graduate Symposium, April 7-9, 2021.
- Attended IFCAM Summer School Workshop 2019 on Mathematics For Data Science organised by IISc Banglore.
- Attended Summer Program in Mathematics - 2017 organised by HRI-Allahabad.

Honors and Award

- Awarded Best Teaching Assistant Award - 2021 by Indian Institute of Technology Mandi in recognition of contribution in the preparation of assignments and clearing doubts of the students in the Data Science 1 course.
- Awarded Outstanding Academic Achievement Award for academic excellence among the graduating batch of MSc Applied Mathematics students in the year 2018.
- Qualified Graduate Aptitude Test in Engineering (GATE) 2018 in Mathematics.
- Awarded Merit cum Mean Scholarship by "IIT Mandi" for the period of one year, from August 2016 to July 2017.

Technical Skills

C, Python, Matlab, LaTeX.

Web Links

Homepage, Google Scholar