

SUJEET KUMAR SINGH

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RESEARCH INTEREST

Polynomial optimization, Multi-objective optimization, Supply chain optimization, Vehicle routing problem, Transportation problem, Fuzzy optimization.

WORK EXPERIENCE

Indian Statistical Institute (Hyderabad Centre), India

Assistant Professor November 2022-Present.

Indian Institute of Management Jammu, India

Assistant Professor June 2020 - November 2022

National University of Singapore, Singapore

(Postdoc) Research Fellow June 2016- June 2019 (3 years)

- P.I- Prof. Mark Goh
- Research Field: Multi-objective and logistics optimization



EDUCATION

Indian Institute of Technology Roorkee, Roorkee, India

Ph.D. in Mathematics (Operations Research) July 2011- April 2016

- Thesis: Development of algorithms for some optimization problems in intuitionistic fuzzy environment.
- Supervisor: Prof. Shiv Prasad Yadav.

Banaras Hindu University, Varanasi, India

M.A in Mathematics 2009-2011

- Thesis: Multi-objective programming problem with generalized convexity. CGPA
- Supervisor: Dr. Shashi Kant Mishra 8.32/10

Vinoba Bhave University, Hazaribagh, India

B.A Mathematics Honors 2005-2008

- Graduated with Distinction 82.25%
- Stood top in the Mathematics honors examination of the university.

FELLOWSHIPS

- CSIR-NET-JRF and GATE qualified in Mathematics, 2011.
- Offer for faculty position from UIST, Macedonia, 2016, not availed.
- Proposed postdoc position from NTU Singapore and McMaster University Canada, 2016, not availed.
- *Offer for postdoc position from NUS Singapore, 2016, availed.*
- Postdoc position from the University of Sydney and NTU Singapore, 2019, not availed.
- *Offer for Senior postdoc position from NUS Singapore 2020, could not avail due to COVID-19 lockdown.*

REVIEWER

EJOR, Annals of Operations Research, CAIE, IEEE Transactions on Fuzzy Systems, Scientific Reports, International Journal of Fuzzy Systems (Springer), Journal of Intelligent and Fuzzy Systems, IEEE Transactions on Systems, Man and Cybernetics: Systems, International Journal of Machine Learning and Cybernetics, Information Sciences, IJOR, IJSAEM, IJFSA, etc.

MEMBERSHIP

- International Society of Global Optimization (<http://www.globaloptimization.org/>)
- Editorial board member, Modern Management Forum, Nov 2017-Nov 2018.
- Editorial board member, American Journal of Operations Management and Information Systems.

PUBLICATIONS

Mathematical Optimization

- Homogeneous scalarization for a class of multi-objective polynomial optimization problems (*to be submitted soon-SIOPT*).
- **Sujeet Kumar Singh**, Vinay Yadav, Modified goal programming approach for solving multi-objective environmental management problem, *Annals of Operations Research*, 2023(**IF= 4.8, SCI, ABDC-A, Q1**). <https://doi.org/10.1007/s10479-023-05342-1>.
- Multi-objective optimization problems with s-norm fuzzy relation constraints (Applied Mathematics and Computation-*communicated*).
- **Sujeet Kumar Singh**, Alka Arya, Pareto efficiency by scalarizing a multi-objective fractional feed formulation problem, 2023 (*submitted to ANOR*).

Supply Chain Optimization

- Sustainable collection systems and incentivization mechanism for single-use flexible packaging-a closed-loop supply chain (*In preparation*).
- Non-homogeneous capacitated vehicle routing problem with a time window and multiple delivery trips (*In preparation*).
- Rizwan Manzoor, B.S. Sahay, **Sujeet Kumar Singh**, Examining the Factors that Facilitate or Hinder the Use of Blockchain Technology to Enhance the Resilience of Supply Chains, 2023 (*submitted to IEEE TEM*)
- Rizwan Manzoor, B.S. Sahay, Kapil Gumte, **Sujeet Kumar Singh**, Blockchain-backed Resilient Strategies in a Stochastic Supply Chain Sourcing and Distribution Environment under Disruption, 2023 (*submitted to the Journal of Business and Industrial Marketing*)
- Deepak Nirmal, KN Reddy, **Sujeet Kumar Singh**, Application of fuzzy methods in green and sustainable supply chain: Critical insights from a systematic review and bibliometric analysis, *Benchmarking*, 2023 (**IF=5.6, ABDC-B, Q1**). <https://doi.org/10.1108/BIJ-09-2022-0563>.
- Rizwan Manzoor, BS Sahay, **Sujeet Kumar Singh**, Blockchain technology in supply chain management: an organizational theoretic overview and research agenda. *Annals of Operations Research*, 2022 (**IF= 4.8, SCI, ABDC-A, Q1**). <https://doi.org/10.1007/s10479-022-05069-5>.
- Shuya Zhong, **Sujeet Kumar Singh** and Mark Goh, Efficient supplier selection: one way to better inventory control, In book: Optimization and Inventory Management, 2019, DOI: 10.1007/978-981-13-9698-4_15 (Book Chapter).

- **Sujeet Kumar Singh** and Mark Goh, “Multi-objective mixed integer programming and an application in a pharmaceutical supply chain”, *International Journal of Production Research*, 57(4), 1214-1237, 2019 (**IF= 9.2, SCI, ABDC-A, Q1**).

Fuzzy Optimization

- Awadh Pratap Singh, Shiv Prasad Yadav and **Sujeet Kumar Singh**, A multi-objective optimization approach for DEA models in a fuzzy environment, *Soft Computing*, 2022 <https://doi.org/10.1007/s00500-021-06627-y> (**SCI, IF=4.1, Q2**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, Scalarizing fuzzy multi-objective linear fractional programming with application, *Computational and Applied Mathematics*, 41:93, 2022 (**SCI, IF=2.6, Q2**).
- Vishnu Singh, Shiv Prasad Yadav and **Sujeet Kumar Singh**, Duality theory in Atanassov's intuitionistic fuzzy mathematical programming problems: Optimistic, pessimistic and mixed approaches, *Annals of Operations Research*, Springer, 296(1), 667-706, 2021 (**IF= 4.8, SCI, ABDC-A, Q1**).
- **Sujeet Kumar Singh** and Deepika Rani, A branching algorithm to solve binary problem in uncertain environment: An application in machine allocation problem, *OPSEARCH*, 56, 1007–1023, 2019 (**IF=1.6, Scopus, ABDC-C, Q2**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Intuitionistic fuzzy multi-objective linear programming problem with various membership functions”, *Annals of Operations Research*, Springer, 269(1), 693-707, 2018 (**IF= 4.8, SCI, ABDC-A, Q1**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “A new approach for solving intuitionistic fuzzy transportation problem of type-2”, *Annals of Operations Research*, Springer, 243(1-2), 349-363, 2016 (**IF= 4.8, SCI, ABDC-A, Q1**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Fuzzy programming approach for solving intuitionistic fuzzy linear fractional programming problem”, *International Journal of Fuzzy System*, Springer, 18(2), 263-269, 2016 (**IF=4.3, SCI, Q2**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Modeling and optimization of multi objective non-linear programming problem in intuitionistic fuzzy environment”, *Applied Mathematical Modelling*, 39, 4617–4629, 2015 (**IF=5.0, SCI, Q1**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Intuitionistic fuzzy non-linear programming problem: Modeling and optimization in manufacturing systems”, *Journal of Intelligent and Fuzzy Systems*, 28, 1421–1433, 2015 (**IF=2.0, SCI, Q2**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “A novel approach for solving fully intuitionistic fuzzy transportation problem”, *International Journal of Operational Research*, Inderscience, 26(4), 460-472, 2016 (**Scopus, ABDC-C, Q3**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Intuitionistic fuzzy transportation problem with various kinds of uncertainties in parameters and variables”, *International Journal of System Assurance Engineering and Management*, Springer, 7(3), 262-272, 2016 (**Scopus, IF=2.0, Q3**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Efficient approach for solving type-1 intuitionistic fuzzy transportation problem”, *International Journal of System Assurance Engineering and Management*, Springer, 6(3), 259-267, 2015 (**Scopus, IF=2.0, Q3**).
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Multiobjective non-linear programming problem in intuitionistic fuzzy environment”, *Proceedings of the International*

Conference on Mathematics & Engineering Sciences-2014 in Mathematical Sciences International Research Journal, 3(1), 147-151, 2014.

- **Sujeet Kumar Singh** and Shiv Prasad Yadav, “Fuzzy relational programming problem with intuitionistic fuzzy coefficients”, *Proceedings of the International Conference on Mathematical Sciences, Elsevier*, 430-434, 2014.

PROJECTS WORKED WITH

- Distribution operations optimization for a logistics company of Singapore.
- Re-shaping the FMCG chain for possible profit enhancement for a global logistics company in Singapore.
- Development of an optimization model for the plastic recycling supply chain for an MNC.

RESEARCH PROPOSAL WRITING

- A proposal for a plastic recycling supply chain based in Indonesia (*Funded at NUS*).
- Development of some tight relaxations for multi-objective polynomial optimization problems (*Internally Funded by the Indian Statistical Institute*).
- On the multi-objective optimizations and its applications (*DCSW-Under Consideration*).
- An scalarization for multi-objective optimization problems (*NPDF-Under Consideration*).
- On non-linear scalarization for multi-objective optimizations (*MATRICES-Under Consideration*).
- Positivity certificates and multi-objective polynomial optimization on non-compact semialgebraic sets (*SRG-Under Consideration*).

CONFERENCE ATTENDED AND PRESENTED PAPERS

- **Sujeet Kumar Singh**, Unbiased scalarization technique for multi-objective fractional feed formulation probl, *International Symposium on Applied Optimization and Game Theoretic Models for Decision Making*, Indian Statistical Institute Delhi, Delhi, India, Feb 01-03, 2023.
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, Algorithmic Approach for solving Balanced IFTP, *International Conference on Optimization Modeling and Applications*, Dept. of Operational Research University of Delhi, Delhi, India, Nov. 29- Dec. 01, 2012.
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, A New Approach for solving Balanced IFTP of Type-2, *International Symposium on Applied Optimization and Game Theoretic Models*, Indian Statistical Institute Delhi, Delhi, India, Jan. 9-11, 2013.
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, Multiobjective Non Linear Programming Problem in Intuitionistic Fuzzy Environment, *International Conference on Mathematics & Engineering Sciences-2014*. Chitkara University, Himachal Pradesh, India, March 20-22, 2014.
- **Sujeet Kumar Singh** and Shiv Prasad Yadav, Fuzzy Relational Programming Problem with Intuitionistic Fuzzy Coefficients, *International Conference on Mathematical Sciences*, Sathyabama University, Chennai, India, July 17-19, 2014.

WORKSHOPS

- **Data Science: Probabilistic and Optimization Methods**, ICTS-TIFR, Bangalore, July 03-07, 2023.
- **Advanced Workshop and Tutorial on Operations Research**, IIM Indore, India, Aug. 22-25, 2012.
- **Scientific Computing: Theory and Practices**, Gurukula Kangri University, Haridwar, India, Oct. 8-13, 2012.

INVITED TALK

- Research talk on Multi-Objective Polynomial Optimization at Dept. of Mathematics, IIT Madras, March 14, 2023.
- Guest lecture on Statistical Applications in Quality Management at VIT Vellore, March 09, 2023.
- Fuzzy Logic, Optimization and Soft Computing in Context of Artificial Intelligence, February 12-18, 2022, Chaudhary Charan Singh University, India.
- 11th Annual International Conference on Industrial Engineering and Operations Management, March 07-11, 2021, Singapore.
- Advancement of Mathematics and its Emerging Areas, July 23-24, 2021, Teerthanker Mahaveer University, India.

SUPERVISION

- Rizwan Manzoor, Ph.D., IIM Jammu (Ongoing)
 - Thesis Title-Three Essays on Supply Chain Resilience

TEACHING

At the Indian Statistical Institute as an Assistant Professor

- *OR-II(Operations Research), MS(QMS), Postgraduate Course*
- *Non-Linear Programming, MS(QMS), Postgraduate Course*

At IIM Jammu as an Assistant Professor

- Quantitative Methods 1(Business Statistics), PG Course, Teaching Feedback-(4.37, 4.49)/5
- Quantitative Methods 2 (Optimization), PG Course, Teaching Feedback-(4.01, 3.96)/5
- Business Research Methods, PG Course, Teaching Feedback-(4.09, 4.23)/5
- Research Methodology II (Quantitative) -Doctoral Course
- Advances in Operations Management- Doctoral Course
- Quantitative Techniques for Managers-EMBA, Teaching Feedback-4.67/5

At IIT Roorkee during my Ph.D. as a TA

- IMA-12 (Operations Research), B.Tech, Undergraduate Course.
- MA-102 (Mathematics), B.Tech, Undergraduate Course.
- MA-501E (Optimization Technique), M.Tech, Postgraduate Course.
- MA-002 (Mathematical Methods), B.Tech, Undergraduate Course.

ADMINISTRATIVE ACTIVITIES

- Chairperson (Research), IIM Jammu, Aug 2020-Nov 2022.
 - Drafted the research policy for IIM Jammu which includes research and publication policies, conference policies, incentive policies, postdoctoral and internship hiring policies, incentive policies, etc. Prepared and replied to different RTI/Rajyasabha questionnaires related to research at

IIM Jammu. Deliberated and delivered all requirements by different authorities as and when needed on research/research data at IIM Jammu.

- Committee member in (MBA, Ph.D and IT) committees, IIM Jammu, 2020-22.
 - Attended the meetings conducted by respective chairpersons and deliberated the thoughts on several MBA issues and doctoral program issues for smooth operation and functioning, reviewed the IT policy for implementation. Developed course curriculums.
- Elected as a Senator in the Student Affairs Council, IIT Roorkee, Session 2013-14.

OTHER ACTIVITIES

- Conducted 17 Editors' Research Seminars by Editors' of top-class management journals at IIM Jammu.
- Conducted a 3 week long Management Development Program in General Management for Executives of SJVN Limited as program Director, Aug 09-27, 2021 at IIM Jammu.

COMPUTATIONAL SKILLS

- MATLAB, LATEX, MS OFFICE, LINGO, R, etc.
- Attended a training course on *AnyLogistix*, Supply Chain Analytics Software, Feb 18-20, 2019, Singapore.

PERSONAL INFORMATION

- Name: Dr. Sujeet Kumar Singh, Date of Birth: May 05, 1987
- Marital Status: Married with two children, Religion: Hindu, Sex: Male
- Citizenship: Indian, Language: English, Hindi

REFERENCES

Dr. Shiv Prasad Yadav
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Indian Institute of Technology Roorkee,
Roorkee-247667, India
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I do hereby confirm that the information furnished above is true to the best of my knowledge and belief.

Sujeet K. Singh

(Sujeet Kumar Singh)