ISE NEWSLETTER

DEPARTMENT OF INDUSTRIAL & SYSTEMS ENGINEERING, I IT KHARAGPUR

1st January 2023 – 31st December 2023

The Department of Industrial and Systems Engineering (ISE) was established in 1973 as the Industrial Management Centre and later elevated to a full-fledged department in the year 1983. With strong focus in research and innovation, together with academic programs tailored to address the needs of the present day technological evolution, ISE has emerged as a unique academic institution in the country. ISE offers the following degree programs:

- ***B.Tech (4-year)*** - B. Tech in **Industrial Engineering**.
- ***Dual Degree (5-year)*** - B.Tech. in **Industrial Engineering** and M.Tech in **Industrial Engineering and Management**.
- ***Dual Degree (5-year)*** - B.Tech in **Manufacturing Science** and M.Tech in **Industrial Engineering and Management**.
- ***Dual Degree (5-year)*** - B.Tech in **Engineering Product Design and Manufacturing** and M.Tech in **Design and Quality Engineering**, with **Mechanical** or **Industrial Electronics** verticals.
- ***M.Tech (2-year)***-M.Tech in **Industrial Engineering and Management**.
- ***M.Tech (2-year)***- *M.Tech in* ***Operation Research & Data Analytics*** *(Approved; to be started from Autumn 2024)*
- Master of Science ***(MS).***
- Doctor of Philosophy ***(PhD).***
- *Post-doctoral Fellowship* ***(PDF).***

Head of the Department:
Prof. J. Maiti

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(Assistant Professor, ISE)

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Mr. Tanmoy Gorai
(Jr. Laboratory Assistant, ISE)

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Mr. Akshay Bhosale
(Research Scholar, ISE)

Message from the Head of the Department

HOD's Desk

Greetings and welcome to the Department of Industrial and Systems Engineering (ISE), IIT Kharagpur. I am happy to share with you the departmental brochure. Over the period of past fifty years, our department has emerged as a knowledge hub to educate students, scholars and professionals in all the disciplines of ISE. Our faculty members bring a diverse range of academic and industry experience. Apart from teaching, they are engaged in cutting edge research and developments funded by various government bodies and private companies. We regularly publish research findings in reputed international journals and present our work in international conferences. Our outreach programs include workshops, short-term courses, industry training programs and conferences.

The ISE graduates regularly find employment in reputed large corporations. They also pursue higher education in renowned universities across the world. Our PhD program has produced many educators who are placed as faculty members in various IITs, IIMs, NITIE and other universities across India, and abroad.

This year 2023 is a special year as ISE completes its 50 years of journey. We are organizing several events to celebrate the golden jubilee, in the form of short-term courses, lecture series, tech festival (OPTIMA) and an International Conference (ICONIEA 2024). We hope this will create better awareness about our department in the larger community of prospective students, scholars, faculty and practitioners. Come, join the ISE family and let us work together in pursuit of excellence to the service of the mankind.

Prof. J. Maiti

Head of the Department,
Department of Industrial & Systems Engineering,
IIT Kharagpur

Obituary

In Remembrance

Retd. Prof. K. C. Sahu

Professor Kailas Chandra Sahu, b.1934, a Distinguished Alumnus and one of the Stalwarts of IIT Kharagpur, has left for his heavenly abode on **14th of April, 2023**, leaving behind a treasure of great values and inspirations for both the teaching and student communities, and will remain a role model for all the teachers of future generations of our country.

Professor Sahu was the **founder Head of the Department**, established as **Industrial Management Centre in 1973**. He set the platform for Industrial Engineering education in India and made significant impact in making Industrial Management Centre as the most preferred educational destination in the subcontinent. Under his able leadership, the Industrial Management Centre was elevated to a **full-fledged department (Department of Industrial Engineering and Management) in 1983**. The contributions to the industries and the academia made by the Department under the guidance of Professor Sahu are worth mentioning. Professor Sahu transformed the activities of the Industrial Engineering and Management and brought excellence in all facets of learning, education, training, research, consulting, and institute industry collaboration. A teacher par excellence, Professor Sahu will always be remembered for his great values and contributions to the cause of **IIT education system**, in particular. A person with the finest mind and human values, the teaching and student community had always found in him a great sense of modesty and good manners in numerous occasions.

In his memory a **'Shradhanjali Sabha'** was organized on 13th May, 2023 via online mode, wherein his family members and esteemed colleagues from Department of Industrial and Systems Engineering (ISE), other departments/sections of IIT Kharagpur, other institutions, and the alumni of IIT Kharagpur were invited.

Workshops and Webinars

Short-term certificate course on "Multivariate Data Analysis with Applications":

During June 26th - 30rd 2023 a Short Term Course on "**Multivariate Data Analysis with Applications**", was offered by Department of Industrial and Systems Engineering, IIT Kharagpur. **Prof. J. Maiti** was the principal coordinator of the course. The course explained **descriptive statictics, multiple linear regression, factor analysis and structural equation modelling**.

Workshop on "Management of Municipal Solid Waste":

On July 31 st , 2023, a workshop on **"Management of Municipal Solid Waste"** was organized jointly by IIT Kharagpur and FullBright-Nehru Specialist Program. The workshop was delivered by **Prof. Subhas C Sarin, Paul T. Norton Endowed** professor, Industrial and Systems Engineering, Virgina Tech University, USA and **Prof. Brajesh Kumar Dubey**, Professor, Civil Engineering, IIT Kharagpur. The session covers the overview of present waste management practices in India- with few case studies and **solid waste echelon-embedded planning with web-based tool**. A team of IITKGP professors including Prof. J. Maiti, (HoD, ISE), Prof. B. Mahanty, Prof. P.K. Ray, Dr. B. G. Menon, Dr. S. Roychowdhury, Dr. A. J. Abraham, Dr. A. Sharma, Dr. C. R. Borra and Dr. A.K. Deb were also present.

ISE Lecture Series on "Application of Industrial Engineering in Semiconductor Manufacturing":

On July 24th – 27th,and August 1st, 3rd, 7th, 10th , 2023 an ISE Lecture Series on **"Application of Industrial Engineering in Semiconductor Manufacturing"** was organized jointly by IIT Kharagpur under Fulbright-Nehru specialist program at Department of ISE, IIT Kharagpur.

Workshops and Webinars

The lecture series was delivered by **Prof. Subhash C. Sarin, Paul T. Norton Endowed Professor**, Industrial and systems Engineering, **Virginia Tech University, USA**. The program enlightened on industrial engineering influences in factory and product optimization for semiconductor fabrication in semiconductor manufacturing.

Short-term certificate course on "Econometric Modeling for Business Applications":

A Short Term Course on **"Econometric Modeling for Business Applications"** was offered by Department of Industrial and Systems Engineering, IIT Kharagpur conducted during November 18, 19, 25, 26 and December 02, 2023 in an online mode. **Dr. Sayak Roychowdhury** was the principal coordinator**, Prof. B.G. Menon** was the joint principal coordinator , **Prof J. Maiti** & **Prof P. Mishra**(HSS) were the co-coordinator of this course. The course explained theoretical background of econometric modelling, introduction to practical aspects with the help of business case-studies, and hands on training in econometric modelling using **Excel** and **R**.

Workshops and Webinars

Short-term certificate course on "Supply Chain Analytics":

Workshops and Webinars

A Short Term Course on **"Supply Chain Analytics"**, was offered by Department of Industrial and Systems Engineering (ISE), IIT Kharagpur during September 22nd - 24th, 2023. **Prof. Abhishek Sharma** was the principal coordinator and Prof. J. K. Jha and Prof. S. P. Sarmah were the Co-Coordinator of the course. The course introduced identification of the inefficiencies in **supply chain, different solution techniques to supply chain problems**, and use of different analytical tools and techniques to design appropriate supply chain strategies based on the competitive nature of the industry.

Workshops and Webinars

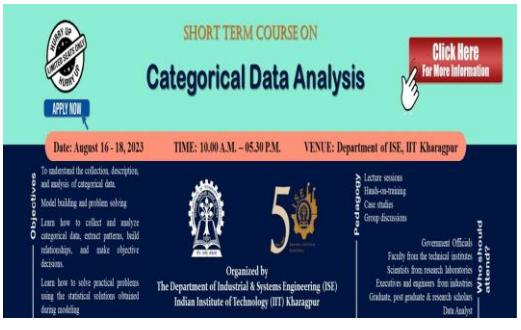
The objective of this course was to equip academicians and practitioners with the concepts and practices of **supply chain management and learning data analytics techniques** that can be leveraged to improve a better coordination with the suppliers and customers of their organization to augment total value addition.

The event featured a diverse range of participants from various sectors. Industry representatives included notable companies such as **Tata Steel, Adani Power, EY India, Al Roumi, TCS Kolkata**, and **Pumpsense Fluid Engineering Pvt Ltd**. The academic sector was well-represented by faculty members from institutions like **Banaras Hindu University (BHU), Independent University of Bangladesh**, and **RV College of Engineering, Mysuru**. Additionally, the event saw active participation from students hailing from prestigious institutions such as **IIT Bombay, IIM Indore, BITS Pilani, FMS Delhi, Jadavpur University, ISM Dhanbad,** and **IIM Shillong**, among others.

International workshop on "Ergonomics Engineering for Healthcare Systems":

In view of the emerging need of human-factors in the healthcare system, a one-day international workshop on **"Ergonomics Engineering for Healthcare Systems"** was successfully conducted **on September 26th, 2023** at International scientific Conference **PREMUS, WDPI,** and **MYOPAIN** 2023 in Bengaluru, India. The workshop was graced by **Prof. P. K. Ray**, of the Department of ISE, **Prof. V. K. Tiwari, Director of IIT Kharagpur**, **Prof. Denny Yu, Purdue University, and Prof. Sandip K. Halder, of Dr. Gray's Hospital, Elgin, UK**. This workshop provides a comprehensive approach for medical and wellness practitioners adopting the same in their care systems.

Short-term certificate course on "Categorical Data Analysis":



A Short Term Course on **"Categorical Data Analysis"**, was offered by Department of Industrial and Systems Engineering (ISE), IIT Kharagpur during August 16th - 18th, 2023. **Prof. Anand Jacob Abraham** and **Prof. Balagopal G Menon** were the principal coordinator of the course. **Prof. J. Maiti** & **B. Mahanty** were the Co-Coordinator of the course. The course addressed descriptive analytics, predictive analytics, and application of data analytics in healthcare, business, and economics domain. The course also involved hands on training using statistical software such as **R**, **SPSS**, **Minitab** and **EViews**.

Workshops and Webinars

Optima 2023: A Celebration of Techno-Optimization (Student tech fest)

Optima 2023, the **Techno-Optimization Festival** organized by the Department of Industrial and Systems Engineering at IIT Kharagpur, took place from **October 6 to 8, 2023**. This event marked a significant milestone as it was re-established after over a decade, commemorating the **50th anniversary** of the Department of **Industrial and Systems Engineering**.

Workshops and Webinars

Workshops at Optima:

- Simulation by FlexSim.
- Data Analysis by Tata Consultancy Services.
- Motion Tracking Systems with Vicon.
- Optimization Using FICO Xpress by FICO.
- VR Tech by DC Vision.

Guest Lectures at Optima:

- **Prof. M K Tiwari**, Director of IIM Mumbai
- **Ashutosh Itkelwar**, Managing Director of Optym India
- **Deeptak Chatterjee**, Head of Application Development and Innovation at Tata Steel
- **Dr. Amit Kumar Das**, Head of Operations Technology at Air India
- **Bala Srinivasan**, Director of Operations Research and Data Science Consulting at Sabre India
- **Ms. Goda Ramkumar**, VP of Data Science at Swiggy
- **Mr. Madhava Venkatesh R**, CTO and Founder of TrusTrace

Workshops and Webinars

Research & Consultancy Projects

Deriving new normative rates for loading and transportation of coal by ESM transport companies of CIL subsidiaries

Sponsoring Agency: Coal India Ltd Kolkata
Value: Rs 58,15,925
Consultant: Prof J K JHA
Co-consultant: Prof J Maiti, Prof S P Sarmah
Duration: September 2023 to January 2024

Manufacture of shells for field guns with improved design and performance

Partner Ministry: Ministry of Defence / Ordinance Factory Board (OFB)
PI: Prof P K Ray
Co-PI: Prof B Mahanty, Prof. V Racherla, Prof. D Chakrabarti
Completed in March' 2023

SPARC Project Design and Development of Automated Systems for Ergonomic Evaluation of Human – Product Interface in Health care Sustems

Partner University: Purdue University, USA
Indian PI: Prof P K Ray
Indian Co-PI: Prof V K Tewari
International PI: Prof D Yu (Purdue University)
International Co-PI: Prof V Aggarwal (Purdue University)

Research & Consultancy Projects

Awards & Accolades

Awards & Accolades

1. **Prof. J Maiti**, Professor, Department of Industrial and Systems Engineering was conferred with **Suresh and Vidya Nair Chair Professor Award**, **2022**.

2. **Prof. J Maiti**, was conferred with **"Outstanding Professor of Occupational Safety and Health"** by the Industrial Engineering and Operations Management **(IEOM)** Society International, **Dec 2023.**

3. **Prof. P K Ray**, Emeritus Professor, Department of Industrial and Systems Engineering has been selected as a recipient of **SRESA Life Time Achievement Award-2024** by the Society for Reliability and Safety **(SRESA)** for contribution in the area of Human Factors Engineering and understanding of Institutional issues and challenges involved while evaluating product / system reliability by the Society for Reliability and Safety (SRESA).

4. **Prof. P K Ray**, has been selected for **APO National Award for Productivity Technical Expert for the year 2022** by APO National Award selection Committee.

5. **Prof. B G Menon**, has been selected in the **editorial board** of Springer journal **"Energy Efficiency"** from January **2024**.

6. **Prof. P K Ray**, has been selected as one of the recipients of **IEA/Tsinghua Award for the year 2023** by the International Ergonomics Association **(IEA)** in recognition of "making significant contribution in post-graduate educational program with course on Human Factors/Ergonomics (HFE) and international collaborative research work on Ergonomics/Human Factors Engineering".

7. **Prof. B Mahanty** took part as a panellist in the thematic session on "Capacity Building in Logistics Sector through **PM-Gatishakti Master Plan**" as a part of 2nd Akhil Bhartiya Shiksha Samagam on 30th July 2023 on invitation from the **Ministry of Education**, Government of India.

8. **Prof. B. Mahanty** delivered a keynote speech on **"System Dynamics Modeling - Archetypes to Strategy Development"** in the two-day workshop on "Systems Dynamics Theory and Practice" during 5-6 February 2024 organized by the Department of **IEOR at IIT Bombay**.

Student Spotlight

Students' Achievement

Embarking on an entrepreneurial journey in late 2020**, Prashant Jangid (19IM30016) launched Minisodas Education** with his roommates, nurturing the ambitious vision of transforming academic assistance and personalized learning on a global scale. The rapid scale-up led to a team of 20+, a student base of 500+, and a freelance tutor network surpassing 1500. Within just a year the platform generates a revenue over **$3M** with a net profit margin of 30%. Their ingenuity led them to develop a custom CRM tool, leveraging the WhatsApp Business API. With WhatsApp's staggering 80% open rates, 100 billion messages sent daily, and its role in conversational commerce, an insight struck them - this could change the game not just for them but for all businesses. That revelation led to their next venture in 2022 — Heltar.

His flagship product, **HeltarChat**, offers user-friendly messaging, efficient client management, and personalized bulk messaging for targeted campaigns. Beyond communication, they offer full-spectrum automation solutions, including workflow, GPT-powered chatbots, and apps for business use cases in their marketplace designed to nurture client relationships and drive innovation.

ISE Student

Launched in April 2023, **HeltarChat** has swiftly gained traction with 100+ paying businesses already on board. They've been honored with the **Antler India Fellowship**, receiving a **$10,000** equity-free grant and access to mentorship, along with the potential to raise up to **$175,000** in the next two months based on growth metrics. They've also secured **$40,000** in funding from GradCapital, elevating their post-valuation to $1.3M. With a dedicated team of over 15+ employees, Heltar has entered its growth phase.

Honourable Mention Award at IEEE IEEM 2023

Akula Nikitha (**19IM30029**) received the **Honourable Mention Award at the IEEE International Conference** on Industrial Engineering and Engineering Management 2023 in Singapore. Collaborating with co-authors Biswajit Kar and Prof. Mamata Jenamani, they presented innovative research on "**A Novel Optimized Tourism Itinerary Recommender System: A Modified Capacitated Vehicle Routing Problem Approach.**" This recognition underscores not only Nikitha's dedication but also the collective excellence of the collaborative team. Soon, she will be joining Optym as an Operations Research Scientist, further contributing to the realm of industrial engineering.

Student Spotlight

Students' Achievement

Shreya Das (22IM30029), a 2nd-year student of the Department of **Industrial and Systems Engineering**, achieved a remarkable feat by winning **Gold** in the women's basketball tournament **at Parakram, IIT Dhanbad**'s prestigious sports fest. The event, held from 8th to 10th March, saw intense competition from 10 teams representing colleges from the eastern part of India. Shreya's exceptional skills and leadership on the court played a pivotal role in her team's victory. She is also a part of the **Inter-IIT Basketball** team, showcasing her dedication and talent in the sport. In recognition of her outstanding performance and contributions to the team's success, she was honored with the **Technology Students' Gymkhana Award** for **Best Performer** of the Team in **Basketbal**l for the year 2023-24.

ISE Student

Contact IISE Student Chapter, IIT Kgp

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Publication Watch

Below is the list of publications appeared in journals and conference proceedings from the Department of ISE in 2022-2023 (as of July 2023).

1. Paramanik, A. R., Sarkar, S., & Sarkar, B. (2023). A two-stage improved Base Point Slacks-Based Measure of super-efficiency for negative data handling. Computers & Operations Research, 150, 106057.
2. Paramanik, A. R., & Mahanty, B. (2023). A circular system for end-of-life tires under extended producer responsibility. Materials and Manufacturing Processes, 1-8.
3. Sai, N. D., Sarker, B., Garg, A., & Maiti, J. (2023, January). A Comparative Study of Distance-Based Clustering Algorithms in Fuzzy Failure Modes and Effects Analysis. In International Conference on Data Management, Analytics & Innovation (pp. 605-624). Singapore: Springer Nature Singapore.
4. Paramanik, A. R., Sarkar, S., & Sarkar, B. (2023). A two-stage improved Base Point Slacks-Based Measure of super-efficiency for negative data handling. Computers & Operations Research, 150, 106057.
5. Sarkar, S., Paramanik, A. R., & Mahanty, B. (2024). A Z-Number Slacks-Based Measure DEA model-based framework for sustainable supplier selection with imprecise information. Journal of Cleaner Production, 140563.
6. Banerjee, S., Atta, S., & Sen, G. (2023, December). Single Depot Heterogeneous Capacitated Vehicle Routing Problem with Simultaneous Delivery and PickUp for Disaster Management Systems. In 2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) (pp. 1758-1762). IEEE.
7. Mukhopadhyay, S., Maji, R. N., & Sen, G. (2023, December). Prediction Model for Infectious Disease Outbreak Tree in Social Contact Networks. In 2023 IEEE International Conference on Industrial Engineering and Engineering Management (IEEM) (pp. 1743-1747). IEEE.
8. Shukla, M., Sarmah, S. P., & Tiwari, M. K. (2023). A multi-objective framework for the identification and optimisation of factors affecting cybersecurity in the Industry 4.0 supply chain. International Journal of Production Research, 61(15), 5266-5281.
9. Sourabh, S., Pavithran, S., Menon, B. G., & Mahanty, B. (2023). Econometric modeling for the influence of economic variables on secondary copper production in India. Resources Policy, 86, 104178.
10. Mathirajan, M., Sujan, R., Rani, M. V., & Dhaval, P. (2023). A machine learning algorithm for scheduling a burn-in oven problem. International Journal of Industrial and Systems Engineering, 43(1), 20-58.
11. Chakraborty, S., Jain, A., & Sarmah, S. P. (2022). An integrated mathematical model based on grey optimal ranking for supplier selection considering pandemic situation. OPSEARCH, 59(4), 1613-1648.
12. Nayak, N., Pant, P., Sarmah, S. P., Jenamani, M., & Sinha, D. (2022). A novel Index-based quantification approach for port performance measurement: A case from Indian major ports. Maritime Policy & Management, 1-32.
13. Bagodi, V., & Mahanty, B. (2023). Drifting the goals archetype: a systemic study. Kybernetes, 52(4), 1325-1350.
14. Singh, K., Maiti, J., & Roychowdhury, S. (2022). A data-driven penalty-reward methodology for performance assessment of risk control systems. Journal of Loss Prevention in the Process Industries, 77, 104756.

15. Chakraborty, S., Nadar, R. A., & Tiwari, A. (2022). Designing a drone assisted sample collection and testing system during epidemic outbreaks. Journal of Global Operations and Strategic Sourcing, 15(2), 283-305.
16. Nair, R. B., Abraham, A., Kumar, K. R., & Sridharan, R. (2024). Optimal pricing decisions of centralized dual-channel supply chains in a duopoly: a study on the influence of competition structure. Sādhanā, 49(1), 1-20.
17. Menon, B. G., Sahadev, S., Mahanty, A., Praveensal, C. J., & Asha, G. (2023). Trivariate causality between economic growth, energy consumption, and carbon emissions: empirical evidence from India. Energy Efficiency, 16(5), 41.
18. Roy, C., Chowdhury, C. R., Misra, S., & Maiti, J. (2021). DQ-Map: Dynamic Decision Query Mapping for Provisioning Safety-as-a-Service in IoT. IEEE Internet of Things Journal, 9(4), 3150-3157.
19. Patra, T. D. P., & Jha, J. K. (2022). Bidirectional option contract for prepositioning of relief supplies under demand uncertainty. Computers & Industrial Engineering, 163, 107861.
20. Singh, A., Thakkar, J., & Jenamani, M. (2022). An integrated Grey-DEMATEL approach for evaluating ICT adoption barriers in manufacturing SMEs: Analysing Indian MSMEs. Journal of Enterprise Information Management, 35(6), 1427-1455.
21. Tewari, R. C., Sharma, S., Routray, A., & Maiti, J. (2023). Effective fall detection and post-fall breath rate tracking using a low-cost CW Doppler radar sensor. Computers in biology and medicine, 164, 107315.
22. Verma, A., Dhalmahapatra, K., & Maiti, J. (2023). Forecasting occupational safety performance and mining text-based association rules for incident occurrences. Safety science, 159, 106014.
23. Kumar, G., & Kumar, A. (2022). An internet of things-enabled decision support system for freight transportation: A case study of Indian special freight transport operator. Computers & Industrial Engineering, 172, 108549.
24. Nayak, N., Sarmah, S. P., & Jenamani, M. (2024). A shippers' perspective multimodal freight transportation analysis considering shallow-draft inland waterways. Computers & Industrial Engineering, 187, 109793.
25. Paramanik, A. R., Sarkar, S., & Sarkar, B. (2023). A two-stage improved Base Point Slacks-Based Measure of super-efficiency for negative data handling. Computers & Operations Research, 150, 106057.
26. Gaula, A. K., & Jha, J. K. (2023). Pricing and quality improvement strategies in a closed-loop supply chain with dual collection channel. International Journal of Systems Science: Operations & Logistics, 10(1), 2244416.
27. Heidarimoghadam, R., Mosaferchi, S., Ray, P. K., Saednia, H., Najafi Ghobadi, K., & Mortezapour, A. (2023). The differences between normal and obese patient handling: re-structural analysis of two questionnaires. BMC Musculoskeletal Disorders, 24(1), 1-8.
28. Saha, R., Roy, C., & Misra, S. (2021). Soft-Safe: Software Defined Safety-as-a-Service for Intelligent Transportation System. IEEE Transactions on Intelligent Transportation Systems.
29. Mahapatra, M. S., & Mahanty, B. (2022). Equitable and effective distribution under capacity constraint and limited budget for capacity augmentation. Computers & Industrial Engineering, 172, 108649.
30. Mondal, R., & Ray, P. K. (2023). A framework for occupational health risk assessment of nursing personnel in Indian healthcare system. IISE Transactions on Healthcare Systems Engineering, 1-18.

31. Sahoo, R., Pasayat, A. K., Bhowmick, B., Fernandes, K., & Tiwari, M. K. (2022). A hybrid ensemble learning-based prediction model to minimise delay in air cargo transport using bagging and stacking. International Journal of Production Research, 60(2), 644-660.
32. Singh, G., Kumari, A., & Gupta, U. C. (2022). Stationary system-length distribution of Markovian bulk service queue with modified bulk service rule and dynamic service rates. International Journal of Computer Mathematics: Computer Systems Theory, 7(1), 42-62.
33. Bagchi, T. P., Mohanty, R. P., & Sinha, S. (2023). A tutorial on optimisation involving the David Ricardo theory on comparative advantage. International Journal of Industrial and Systems Engineering, 44(1), 34-51.
34. Yilmaz Goler, A. M., Tarbin Jannuzzi, A., Biswas, A., Mondal, S., Basavanakatti, V. N., Jayaprakash Venkatesan, R., ... & TuYuN, A. F. (2023). Analysis of quinolinequinone analogs with promising cytotoxic activity against breast cancer. Chemistry & Biodiversity, 20(9), e202300848.
35. Das, S., Khanwelkar, D. R., & Maiti, J. (2024). A semi-automated coding scheme for occupational injury data: An approach using Bayesian decision support system. Expert Systems with Applications, 237, 121610.
36. Nadar, R. A., Jha, J. K., & Thakkar, J. J. (2023). Adaptive variable neighbourhood search approach for time-dependent joint location and dispatching problem in a multi-tier ambulance system. Computers & Operations Research, 159, 106355.
37. Bagodi, V., & Mahanty, B. (2023). Two-wheeler authorised service centre: a system dynamics study of'limits to growth'archetype. International Journal of Industrial and Systems Engineering, 43(4), 464-490.
38. Karmakar, K., & Ray, P. K. (2023). Impact of the covid-19 pandemic on blood transfusion service: A case study from Kolkata, India. Asia Pacific Journal of Health Management, 18(2), 122-132.An integrated RFUCOM – RTOPSIS approach for failure modes and effects analysis: A case of manufacturing industry
39. Dwivedi, Y. K., Hughes, L., Kar, A. K., Baabdullah, A. M., Grover, P., Abbas, R., ... & Wade, M. (2022). Climate change and COP26: Are digital technologies and information management part of the problem or the solution? An editorial reflection and call to action. International Journal of Information Management, 63, 102456.
40. Singh, S. K., & Jenamani, M. (2023). ProcessChain: A blockchain-based framework for privacy preserving cross-organizational business process mining from distributed event logs. Business Process Management Journal.
41. Shukla, M., Sarmah, S. P., & Tiwari, M. K. (2023). A stochastic bi-objective cybersecurity analyst scheduling problem with preferential days off and upskilling decisions. Computers & Industrial Engineering, 183, 109551.
42. Samanta, S., Sen, G., & Ghosh, S. K. (2022). A literature review on police patrolling problems. Annals of Operations Research, 316(2), 1063-1106.
43. Chen, M. C., Yerasani, S., & Tiwari, M. K. (2023). Solving a 3-dimensional vehicle routing problem with delivery options in city logistics using fast-neighborhood based crowding differential evolution algorithm. Journal of Ambient Intelligence and Humanized Computing, 14(8), 10389-10402.

44. Reddy, K. N., Kumar, A., Choudhary, A., & Cheng, T. E. (2022). Multi-period green reverse logistics network design: An improved Benders-decomposition-based heuristic approach. European Journal of Operational Research, 303(2), 735-752.
45. Mahapatra, M. S., Pradhan, P. C., & Jha, J. K. (2021). Sourcing decisions with order allocation under supply disruption risk considering quantitative and qualitative criteria. Operational Research, 1-43.
46. Sakhare, C. S., Chakraborty, S., Sarmah, S. P., & Singh, V. (2024). Improvement of supplier delivery performance under uncertain capacity allocation and delivery time window. International Journal of Quality & Reliability Management, 41(1), 324-359.
47. Pattanaik, S., & Jenamani, M. (2023). Identifying the cooling heterogeneity and quality decay of Indian mangoes during cold chain export by multiphysics modeling. Journal of Food Process Engineering, 46(3), e14250.
48. Kumar, V., Kalita, K., Chatterjee, P., Zavadskas, E. K., & Chakraborty, S. (2022). A SWARA-CoCoSo-based approach for spray painting robot selection. Informatica, 33(1), 35-54.
49. Singh, A., Jenamani, M., Thakkar, J. J., & Rana, N. P. (2022). Quantifying the effect of eWOM embedded consumer perceptions on sales: An integrated aspect-level sentiment analysis and panel data modeling approach. Journal of Business Research, 138, 52-64.
50. Paramanik, A. R., & Mahanty, B. (2023). A circular system for end-of-life tires under extended producer responsibility. Materials and Manufacturing Processes, 1-8.
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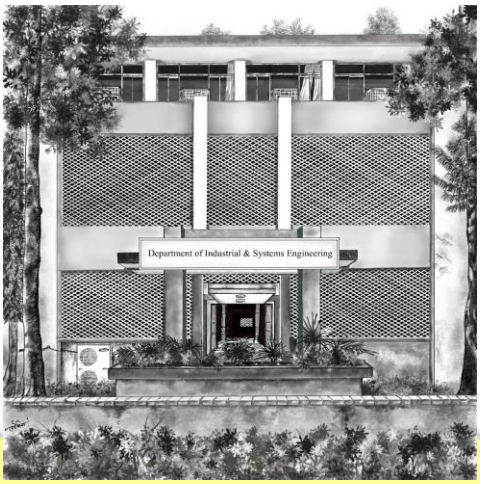

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