

# ISE NEWSLETTER

DEPARTMENT OF INDUSTRIAL & SYSTEMS  
ENGINEERING, IIT KHARAGPUR

*Autumn 2021*

**T**he 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)** 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) in **Industrial Engineering and Management**.
- Master of Science (**MS**).
- Doctor of Philosophy (**PhD**).



**Head of the Department:**  
Prof. J. Maiti

**Editor-In-Chief:**  
Dr. Sayak Roychowdhury  
(Assistant Professor, ISE)

**Associate Editor:**  
Mrs. Shampa Goswami  
(Sr. Tech Superintendent, ISE)

**Student Editor:**  
Mr. Akshay Bhosale, Research  
Scholar

**Student Associate Editor:**  
Mr. Sourav Bagchi, Research Scholar



# Message from the Head of the Department

## HOD's Desk

*It is with great pleasure that I am presenting the current issue of our newsletter. I wish you all a very happy, productive and prosperous new year 2022. As we are all witnessing another wave of the pandemic, compelled to continue with online classes, we are hopeful that this ordeal will be over soon, and we will be back to our usual ways.*

*These unprecedented restrictions have made us rethink how we live our lives and pose numerous challenges that we did not know existed. As academicians and researchers, we must make every effort to use our knowledge, skill and experience to solve these unforeseen problems that our society is facing at large. The time has come to work together with our esteemed alumni, our industry partners and fellow academicians to make impactful contributions towards the advancement of our nation.*

*Finally, I encourage our dear students to develop a perspective towards solving the most complex of the problems our nation faces today. Spend some time reflecting on how you can focus your intelligence and energy to bring new solutions for the greater good of all. In the beginning, you need to seek just the smallest steps that you can take and the simplest changes that you can make. Gradually, they will open up new avenues for you to explore. Through your open mind, curiosity and appetite for new challenges, you will find many exciting days ahead and experience the utmost joy of learning through contribution.*



**Prof. J. Maiti**

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

# Obituary

*In Remembrance*

## Retd. Prof. G. C. Mitra

**P**rof. G. C. Mitra, former Engineer-in-Chief and Secretary to Government in the Works Department, passed away on December 23, 2021. Prof Mitra, who was conferred with the **Padma Shri in 2003**, played a prominent role in the **restoration of the Jagannath Temple at Puri** and Sun Temple at Konark as a Member of the Core Committee constituted by the Archaeological Survey of India. While serving the Government, he did his **MTech and PhD from IIT Kharagpur**, and subsequently worked as a Professor in the Department of ISE, IIT Kharagpur. Prof Mitra almost singlehandedly developed the IIT, Kharagpur Bhubaneswar campus, which subsequently led to the establishment of IIT, Bhubaneswar. He also played a prominent role in construction of a large number of cyclone shelters, which came up in the aftermath of the 1999 Super Cyclone.





# Workshops and Webinars

## Webinar by Industry Experts

**A** live webinar on the **Governed Operationalization of Models Developed and Deployed in Heterogeneous Platforms (ML Ops)** by Mr. Sourav Mazumder, was organized by Department of Industrial and Systems Engineering IIT Kharagpur & IISE - Chapter #660. **Mr. Sourav Mazumder** is an IBM Data Scientist Thought Leader and The Open Group Distinguished Data Scientist. He has also consistently provided directions to and successfully led numerous challenging **Artificial Intelligence, Data Science and Big Data projects**, applying various related methodologies ranging from Descriptive statistics, Probabilistic Modelling, Algorithmic Modelling, Natural Language Processing, etc., to solve critical business problems.

**UPDESHA 2021**  
Industrial & Systems Engineering  
IIT Kharagpur

**Mr. Sourav Mazumder**  
AI/ML Operationalization  
Leader - IBM Data and AI  
Expert Lab and Learning,  
The Open Group  
Distinguished Data  
Scientist

**LIVE WEBINAR**

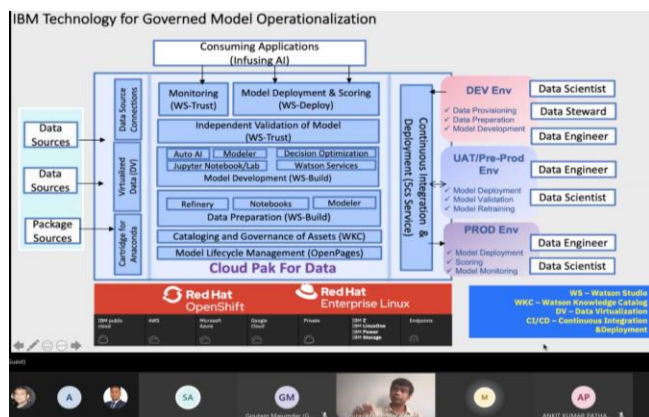
**Governed Operationalization of Models developed & deployed in Heterogeneous platforms(ML Ops)**

**SATURDAY, AUGUST 14<sup>TH</sup> 2021**  
8 PM IST | Microsoft Teams

Organized by  
**INSTITUTE OF INDUSTRIAL & SYSTEMS ENGINEERS**  
IISE UNIVERSITY CHAPTER  
#660 IIT KHARAGPUR

For inquiries Contact **Gaurav Kumar**  
President, IISE University Chapter  
#660, IIT Kharagpur  
gaurav2talk@gmail.com  
+91 9599111615

Register now for free



Trustworthy AI

**Governed Operationalization of AI Models**

from principle to practice

August 2021

**Sourav Mazumder**  
The Open Group Distinguished Data Scientist  
AI & ML Operationalization Leader  
IBM Expert Lab  
smazumder@us.ibm.com  
<https://www.linkedin.com/in/souravmazumder/>

## Contact IISE Student Chapter, IIT Kharagpur

Facebook: <https://www.facebook.com/IISEKGP>

Linkedin: <https://www.linkedin.com/iise-university-chapter-iit-kharagpur-660/>

Twitter: <https://twitter.com/DeptIISEIITKGP>

Instagram: @iise\_iitkgp\_660

YouTube: Subscribe- Industrial and Systems Engineering IIT Kharagpur

# Students Spotlight

## Students Activities

### Helping Local Children in Assam

Coaching for  
underprivileged  
students



**Mr. Babul Pegu(18IM30030)**, a fourth year dual-degree student of ISE, spent the last summer, coaching underprivileged students from class V to XII in **Majuli Island, Assam**. His main objective was to encourage the youth of the village to come out and achieve their goals & show them the different paths and opportunities. He focused on training primary school students for **Jawahar Navodaya Vidyalaya Entrance Examination**. He proudly shares that 2 students in session 2020-2021 and 3 students in session 2021-2022 have been selected, and got seats in JNV Jorhat, Assam.

# Students Spotlight

## Students Activities

### Honda Y-E-S Award 2021-2022

**D**ebraj Chatterjee (19IM10039) was selected for the **Honda Y-E-S (Young Engineers and Scientists) Award 2021-2022** by Honda Foundation, India. The award fosters future leaders in the **field of science and technology**. The program hopes to promote dissemination of eco technology among the young generations and at the same time to strengthen interaction and exchange between Japanese youth and young people expected to lead science, technology and industry in their respective countries.



### Virtual Model of HJB Hall of Residence, IIT Kharagpur

**A**nuj Kumar Singh (18IM30006) had applied Virtual Reality and Work System Design in the simulation of Virtual Model of the **Homi Jehangir Bhabha Hall of Residence**, Indian Institute of Technology Kharagpur by the use of **Google SketchUp software**. Also, methodologies like marking the dimensions of spaces in plan, points and line model, creating openings (like windows and doors for each floor), wireframe model and texture 3D model are critically applied to reflect the same replica of the HJB Hall in the model. He got the idea of simulating the virtual model of HJB Hall, IIT Kharagpur due to ongoing online semester because of the **Covid-19 pandemic** that don't allow the graduating students of the HJB Hall, IIT KGP to have their farewell in offline mode. The video of this model is available: <https://youtu.be/QcrVdniu19c>





# Faculty Spotlight

*Faculty News*

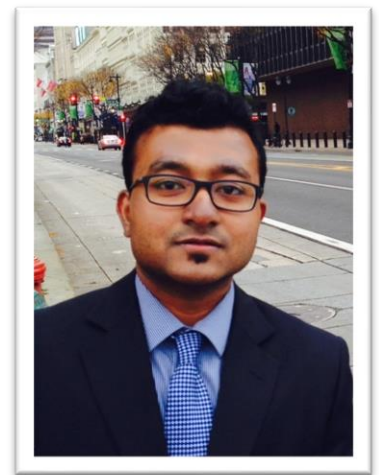
## Prof. J. Maiti was Conferred The ORSI Distinguished Educator Award



**P**rof. J. Maiti, , Head of the Department of Industrial and Systems Engineering, has been awarded the **Distinguished Educator Award** in the Management Science disciplines for the year 2020 by the Central Council of the **Operational Research Society of India**. The **Operational Research Society of India (ORSI)** was established in 1957 under the leadership of Prof. Prasanta Chandra Mahalanobis. During its Diamond Jubilee celebrations as well as 125th birthday of **Prof P. C. Mahalanobis** in 2017, the Central Council of ORSI decided to introduce an award in his memory. Prof. Maiti joined the ISE Department in 2003. He has made notable contributions in the discipline of Safety Engineering and Analytics. He has many years of experience in the diverse areas of risk assessment and uncertainty analysis, human factors and ergonomics, prevention through design (PtD), quality analytics, virtual reality applications and multivariate statistical modeling . He is also serving as the **Chairman of Center of Excellence in Safety Engineering and Analytics (CoE-SEA), IIT Kharagpur.**

## Research Project on Socio-economic Impact of Migration from DST-NGP

**D**r. **Sayak Roychowdhury**, Assistant Professor, Department of ISE has received funding for the project titled “Socio-economic Impact of Migration during COVID-19 Crisis in the Sundarbans Region: A Study of Sustainable Solutions using Geo-spatial Analytics” from DST-NGP (National Geospatial Programme). The objective of the project include creation of a knowledge base and study the impact of migration and reverse migration on the socio-economic status of the people living in the villages in the Sundarban region. The project also aims to design intervention strategies to create sustainable opportunities for the local population, by identifying the dynamics and underlying factors of migration, interactive resource mapping and by developing a multi-hazard cascade model affecting the people in the region.

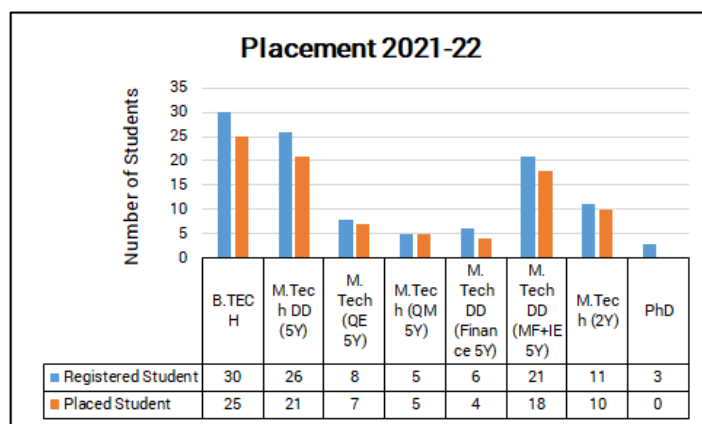


# Department News

## Other news

### Placement news

The academic year 2021-22 has been an excellent year in terms of placement. Among 110 students and scholars registered with the Career Development Centre (CDC), 90 students got placed. The major employers include *Microsoft, Amazon, Intel, Goldman Sachs, American Express, HP, AB InBev, Schneider Electric, FICO, General Mills, Ola, Axis Bank, Kotak Securities* among others.



### New Faculty Members in ISE Family

**Dr. Anand Jacob Abraham**



**Dr. Anand Jacob Abraham** has joined as an Assistant Professor in the Dept. of Industrial and Systems Engineering, IIT Kharagpur in January 2022. He previously worked as **Assistant Professor in Operations and Supply Chain Area of IIM Jammu**, and as an **Ad-hoc Faculty of Industrial Engineering** in the Department of Mechanical Engineering **NIT Calicut**. Anand completed his **Ph.D. from the Department of Management Studies IISc Bengaluru**, his MTech in Industrial Engineering and Management from NIT Calicut, and his BTech in Mechanical Engineering from University of Calicut. His areas of research interest are Management of Water Resources, Environmental Economics, Game theory, and Applied Operations Research. His teaching interests are **Operations Research, Game theory, Decision modeling, Probability theory, etc.**



# Department News

## Other news

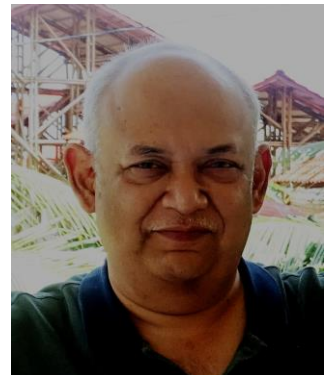
### Dr. Abhishek Sharma

**D**r. **Abhishek Sharma** has joined as an Assistant Professor in the Dept. of Industrial and Systems Engineering, IIT Kharagpur in January 2022. Previously, he has served as faculty at **IMT Business School Dubai and School of Management & Entrepreneurship, IIT Jodhpur (SME-IIT Jodhpur) in Operations and Supply Chain Management** areas. He is **PhD from IIM Rohtak** in operations area and Bachelor of Technology graduate in Chemical Engineering from NIT Srinagar. His research interests include **behavioural operations, social preferences in supply chain management, channel coordination & supply chain contracts, multi-channel supply chains, green supply chain**, etc. His teaching interests include production and operations management, operations research and quantitative techniques, logistics and supply chain management, and project management. His research work has been published in a number of reputed academic journals and he has also presented his work in leading international conferences such as 26th Annual European Operations Management Association (EuROMA) conference 2019 held in Helsinki, Finland. Additionally, he is lean **six sigma green belt certified** by background. Prior to doctoral studies, he has worked with **Tata Chemicals Ltd. (Fertilizer's division), Babrala** in the ammonia production department. He had also qualified for M.Tech. in Chemical Engineering at IIT Delhi through GATE 2013 with AIR 320.



### Farewell to Prof. Soumyanath Chatterjee

**T**he Department of ISE, bade farewell to **Prof. Soumyanath Chatterjee** in November 2021. Prof. Chatterjee joined the department in 2019 as the **TVS Chair Professor**. Prior to joining IIT Kharagpur, he has worked in multinational companies like Tata Motors and IBM for many years. His amicable personality along with vast industry experience and keen interest in developing electronic circuits made him popular among the students as well as his faculty colleagues within a short period of time. He taught a number of courses in the IM and QEDM curricula, such as Product Development, Design for Manufacturability and Assembly, Design for Assembly and Automation.



# Alumni Focus

## ISE Alumni

### Building an ISE (IEM) Alumni Network

**W**e, at the Department of ISE wish to stay connected with our alumni. Please follow us on the social media pages to get the latest updates on the department.

**Facebook:** <https://www.facebook.com/ISEIITKharagpur>

**Linkedin:** <https://in.linkedin.com/school/iitkgp.ise/>

We believe our strong alumni community can bring incredible value to our students and scholars. Their diverse experience can help the department in shaping the future course of actions, as well as support the students into making more informed career decisions. Moreover, ***we will be celebrating the Golden Jubilee of the Department of ISE in 2023***. **We sincerely appeal to all the members of the ISE alumni to participate in the grand celebration.** This is why we are creating an alumni database. **Please take a few minutes to fill up this google form** <https://forms.gle/jqHRN6p1Y98heCun8> . We assure you, your information will remain confidential with us.

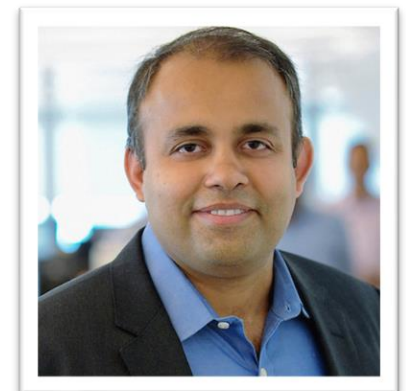
### Featured Alumnus

**I**n this issue of ISE Newsletter, we are featuring one of our former students. Mr. Abhinav Anand graduated with B.Tech in 2002 from ISE (then IEM). He currently works for Goldman Sachs as the **Managing Director (Consumer Division) in New York**. Mr. Anand shared his experiences and insights with the ISE Newsletter team.

#### Mr. Abhinav Anand

**Managing Director, Goldman Sachs (Consumer Division), (IITKGP-IEM, 2002 batch)**

**Mr. Abhinav Anand** joined Goldman Sachs in 2015 as a **managing director** in the Consumer division where he heads consumer and small business lending. He is passionate about building customer-centric digital products and experiences that are simple and transparent to use. Abhinav has 18 years of experience in **product management, data science and risk management** across a variety of consumer products. Prior to joining Goldman Sachs, he worked at **Discover Financial Services** in several leadership roles, most recently as chief model risk officer and head of operational risk. Abhinav spent his early years leading data science teams in insurance, asset management and advertising industries. Abhinav earned a Bachelor of Technology in Industrial Engineering from the Indian Institute of Technology, Kharagpur, an MS in Industrial Engineering from Iowa State University and an MBA from the Kellogg School of Management at Northwestern University.



# Alumni Focus

## ISE Alumni

### Q.1) Tell us some of the fond memories of your days in IITKGP.

Some of my favourite memories revolve around late night discussion/debates with my friends on a variety of topics at LLR Hall of Residence. The bonds we made then persist even 20 years after graduation.

### Q. 2) How did ISE (IEM) of IITKGP prepare you for your career and overall personality development?

ISE department exposed me to the then new field of data science and its applicability to engineering problems. My initial graduate research was on the **intersection of CAD and data science** and from there on I spent over a decade exploring business problems related to **data science in search engine, advertising, insurance, and banking space**. I should add that the proximity to VGSOM, interaction with MBA students, participation in business plan competitions further shaped my personality and prepared me for my career.

### Q.3) Tell us how our students can prepare to assume corporate leadership roles in future?

I would recommend to our students to explore their interests beyond academics and try their hands at numerous extracurricular activities that the institute provides access to. Learn **how to work together as a team** whether you are in a lab or on the field or on the stage. Early success in corporate life comes through collaboration and learning as a group.

### Q.4) What is your take on the relevance of the B.Tech in Industrial and Systems Engineering in the present corporate world?

The B. Tech curriculum at Industrial and Systems engineering trains students on concepts of applied math and statistics, mechanical engineering, computer science and management science. The **“system thinking approach”**- the ability to break down a large-scale project into smaller problem sets comes natural through the courses and project works. In corporate world, both engineering and business problems are interdisciplinary, involve large teams and have deadlines. The B. Tech course sets the right foundation for the students.

### Q.5) What would be your advice to our undergraduate students who aim to pursue higher studies?

Specifically for undergraduate students looking to pursue higher studies in US/Europe my advice would be to explore programs beyond traditional MS/PhDs in IE. Most universities offer programs in interdisciplinary fields in both engineering and business schools that may be better suited to your interests and career aspirations.

### Q.6) What would be your message to our current students?

Make the most of your time at IITKGP, have a plan when you graduate but be flexible on where life and career takes you.



# Publication Watch

## ISE Publications

**B**elow is the list of publications from the Department of ISE issued between October 2021 and December 2021.

1. Garg A., Maiti J., Kumar A. (2022). Granulized Z-OWA aggregation operator and its application in fuzzy risk assessment. *International Journal of Intelligent Systems*, 37(2), 1479-1508.
2. Sarkar S., Vinay S., Djeddi C., Maiti J. (2022). Classification and pattern extraction of incidents: a deep learning-based approach. *Neural Computing and Applications*.
3. Patra T.D.P., Jha J.K. (2022). Bidirectional option contract for prepositioning of relief supplies under demand uncertainty. *Computers and Industrial Engineering*, 163.
4. 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.
5. Das S., Garg A., Khorania Y., Maiti J. (2022). Dual hesitant Z-number (DHZN), correlated distance, and risk quantification. *International Journal of Intelligent Systems*, 37(1), 625-660.
6. Nadar R.A., Jha J.K., Thakkar J.J. (2021). Strategic location of ambulances under temporal variation in demand and travel time using variable neighbourhood search based approach. *Computers and Industrial Engineering*, 162.
7. Juvvala R., Sarmah S.P. (2021). Evaluation of policy options supporting electric vehicles in city logistics: a case study. *Sustainable Cities and Society*, 74.
8. Mandal J., Mitra R., Gupta V.K., Subramanian N., Kayikci Y., Tiwari M.K. (2021). Optimal allocation of near-expiry food in a retailer-foodbank supply network with economic and environmental considerations: An aggregator's perspective. *Journal of Cleaner Production*, 318.
9. Sharma A., Kumar V., Babbar A., Dhawan V., Kotecha K., Prakash C. (2021). Experimental investigation and optimization of electric discharge machining process parameters using grey-fuzzy-based hybrid techniques. *Materials*, 14(19).
10. Das D.N., Sewani R., Wang J., Tiwari M.K. (2021). Synchronized Truck and Drone Routing in Package Delivery Logistics. *IEEE Transactions on Intelligent Transportation Systems*, 22(9), 5772-5782.
11. Roy C., Misra S., Maiti J., Nag S. (2021). EdgeSafe: Dynamic Load Balancing among Edge Nodes for Provisioning Safety-as-a-Service in Vehicular IoT Applications. *IEEE Transactions on Vehicular Technology*, 70(9), 9320-9329.

# Publication Watch

## ISE Publications

12. Sahoo R., Pasayat A.K., Bhowmick B., Fernandes K., Tiwari M.K. (2021). A hybrid ensemble learning-based prediction model to minimise delay in air cargo transport using bagging and stacking. *International Journal of Production Research*.
13. Bagodi V., Mahanty B. (2021). Drifting the goals archetype: a systemic study. *Kybernetes*.
14. Sahoo R., Bhowmick B., Tiwari, M.K. (2021). Developing a model to optimise the cost of consolidated air freight considering the varying scenarios. *International Journal of Logistics Research and Applications*.
15. Groswami A., Modi A., Sahoo B.K., Sewani R., Singhanian R., Garg S., Ravichandran H., Tiwari M.K. (2021). A novel metaheuristic for the office bus routing problem. *IISE Annual Conference and Expo 2021*, 818-823.
16. Chakraborty S., Nadar R.A., Tiwari A. (2021). Designing a drone assisted sample collection and testing system during epidemic outbreaks. *Journal of Global Operations and Strategic Sourcing*.
17. Chakraborty A., Misra S., Maiti J. (2021). Mobility-Aware Controller Orchestration in Multi-Tier Service-Oriented Architecture for IoT. *IEEE Transactions on Vehicular Technology*.
18. Mishra A., Verma P., Tiwari M.K. (2021). A circularity-based quality assessment tool to classify the core for recovery businesses. *International Journal of Production Research*.
19. Chetan T.G., Jenamani M., Sarmah S.P. (2021). Iterative multi-attribute procurement auction with decision support for bid formulation. *Asia-Pacific Journal of Operational Research*.
20. Singhanian R., Sawkar C., Tiwari M.K. (2021). Optimal sensor deployment to diagnose large-scale manufacturing systems using a convergence-trajectory controlled ant colony system algorithm. *Proceedings of the ASME 2021 16th International Manufacturing Science and Engineering Conference, MSEC 2021*, 2.
21. Banerjee S., Jenamani M., Pratihari D.K. (2021). An approximate marginal spread computation approach for the budgeted influence maximization with delay. *Computing*.
22. Gupta V.K., Dakare S., Fernandes K.J., Thakur L.S., Tiwari M.K. (2021). Bilevel Programming for Manufacturers Operating in an Omnichannel Retailing Environment. *IEEE Transactions on Engineering Management*.
23. 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*.
24. Mohapatra P., Tripathy S., Dash A., Biswal A. (2021). Supplier Relationship Management Is a Key to Supply Chain Management. *Lecture Notes in Mechanical Engineering*, 661-670.

# Publication Watch

## ISE Publications

25. Pothal L.K., Tripathy S., Kumar K., Dash A. (2021). Study of Customer Relationship Management in Automobile Industry. Lecture Notes in Mechanical Engineering, 649-660.
26. Patnaik A., Tripathy S., Dash A. (2021). Identifying the Features Influencing Sustainable Products: A Study on Green Cosmetics. Lecture Notes in Mechanical Engineering, 631-640.
27. Mohapatra B., Kuruvilla A., Dash A., Tripathy S. (2021). A Framework of Lean–Six Sigma: An Evolutionary Approach. Lecture Notes in Mechanical Engineering, 641-647.
28. Ghadge A., Jena S.K., Kamble S., Misra D., Tiwari M.K. (2021). Impact of financial risk on supply chains: a manufacturer-supplier relational perspective. International Journal of Production Research, 59(23), 7090-7105.

***Please send us your stories for future issues of our newsletter at  
["iseiitkgp.newsletter@gmail.com"](mailto:iseiitkgp.newsletter@gmail.com)***

