ASHISH KUMAR, Ph.D.

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EDUCATION

Qualification	Institute	Year
PhD	Indian Institute of Technology Kharagpur	2025
M.Tech	Indian Institute of Technology Kharagpur	2021
B.Tech	Uttar Pradesh Technical University	2014

RESEARCH INTERESTS

- Quantitative Safety and Risk Analysis
- Uncertainty and Decision Analysis
- Resilience Engineering and Sociotechnical Systems
- Data-Driven Safety Analytics

PROFESSIONAL EXPERIENCE

Officer (Aviation) & Designated Safety Officer, Indian Oil Corporation Limited, India, 2014-2018

RESEARCH OUTPUT

JOURNAL PUBLICATIONS

1. **Kumar, A.**, Singh, S.K., Samanta, B., & Bhattacherjee, A. (2025). Risk assessment in sociotechnical systems based on functional resonance analysis method and hierarchical fuzzy inference tree. *Scientific Reports*, 15(1), 23827.
2. **Kumar, A.**, Senapati, A., Upadhyay, R., Chatterjee, S., Bhattacherjee, A., & Samanta, B. (2025). An uncertainty-aware decision support system: Integrating text narratives and conformal prediction for trustworthy accident code classification. *Process Safety and Environmental Protection*, 108134.
3. **Kumar, A.**, Kumar, R., Samanta, B., & Bhattacherjee, A. (2026). Managing Performance Variabilities to Enhance Safety in Complex Socio-Technical Systems: A Multicriteria

Decision-Making Approach. *ASCE-ASME Journal of Risk and Uncertainty in Engineering Systems, Part B: Mechanical Engineering*, 12(3), 031205.

4. **Kumar, A.**, Upadhyay, R., Samanta, B., & Bhattacherjee, A. (2024). Improving safety in complex systems: A review of integration of functional resonance analysis method with semi-quantitative and quantitative approaches. *Human Factors and Ergonomics in Manufacturing & Service Industries*, 34(6), 572–588.
5. **Kumar, A.**, Senapati, A., Bhattacherjee, A., Ghosh, A., & Chau, N. (2024). A practical framework to develop and prioritize safety interventions to improve underground coal miners' safety performance. *WORK*, 77(2), 697–709.
6. **Kumar, A.**, Upadhyay, R., Senapati, A., Samanta, B., & Bhattacherjee, A. (2026). Understanding the role of organizational resilience, workers' well-being, and hazard perception on workplace injuries in an aluminum smelter. *WORK*.
7. Upadhyay, R., **Kumar, A.**, Bhattacherjee, A., Patra, A.K., & Chau, N. (2024). Reducing musculoskeletal disorders in iron ore mine operators: A fuzzy-based intervention approach. *WORK*, 78(1), 131–152.
8. Sharma, A., **Kumar, A.**, Mandal, B.B., & Maiti, J. (2025). Evaluating risk of lumbar injury among dumper operators from occupational exposure to low-frequency seat vibration. *International Journal of System Assurance Engineering and Management*, 16(4), 1357–1368.
9. Upadhyay, R., **Kumar, A.**, & Bhattacherjee, A. (2025). A Comprehensive Review of Whole-Body Vibration Exposure Assessment Among Heavy Earthmoving Equipment Operators in the Mining Industry. *Mining, Metallurgy & Exploration*, 17, 1–32.
10. Sharma, A., **Kumar, A.**, & Mandal, B.B. (2025). Association of Risk of Lumbar Injury Outlined in ISO 2631–5:2018 with Self-Reported Low Back Pain Among Dumper Operators in Opencast Coal Mine. *Mining, Metallurgy & Exploration*.
11. **Kumar, R.**, **Kumar, A.**, Pathak, P., & Samanta, B. (2025). A modified semi-quantitative framework for assessing the impacts and sustainability of iron ore mining in a biodiverse forest. *Environmental Development*, 101306.
12. Upadhyay, R., **Kumar, A.**, Bhattacherjee, A., & Chau, N. (2025). Comparative Investigation of Whole-Body Vibration Exposure and Musculoskeletal Health Risks Among Dumper Operators in Coal and Iron Ore Mines. *Mining, Metallurgy & Exploration*, 42(5), 3011–3025.
13. Sharma, A., **Kumar, A.**, Vardhan, H., Mangalpady, A., Mandal, B.B., Senapati, A., Avchar, A., & Saini, S. (2025). Human-in-the-Loop Data Analytics for Classifying Fatal Mining

Accident Causes Using Natural Language Processing and Machine Learning Techniques. *Mining, Metallurgy & Exploration*.

14. Sharma, A., **Kumar, A.**, There, S., Mandal, B.B., & Maiti, J. (2025). Occupational whole-body vibration exposure and low back pain: Epidemiological insights from Indian coal mining. *Discover Public Health*, 22(1), 773.

15. Sharma, A., **Kumar, A.**, & Saini, S. (2025). Associations of occupational and demographic factors with cause of fatalities in the Indian coal mining sector. *Journal of Mining, Metals & Fuels*, 73(2), 259–270.

CONFERENCE PRESENTATIONS

1. **Kumar, A.**, Upadhyay, R., Samanta, B., & Bhattacherjee, A. (2023). A Novel Approach to Mining Risk Assessment: Fuzzy Opinion Aggregation and Fuzzy Inference System. *International Conference on Sustainable and Innovative Mining Practices*, NIT Rourkela, Springer Nature.

2. **Kumar, A.**, Upadhyay, R., Samanta, B., & Bhattacherjee, A. (2024). Investigating the Influence of Resilience Engineering Indicators on the Safety Environment of an Aluminum Smelter. *XXXVIth Annual International Occupational Ergonomics and Safety Conference*, Denver, USA.

3. **Kumar, A.**, Samanta, B., & Bhattacherjee, A. (2024). Association of Some Personal and Occupational Factors with Occupational Injury in an Aluminum Smelter: A Case Study. *EPICOH Early Career Conference*, Barcelona, Spain.

4. **Kumar, A.**, Samanta, B., & Bhattacherjee, A. (2025). Identification of Personal, Workplace, and Organizational Injury Risk Factors in an Aluminum Smelter: A Case Study. *Asian Mining Congress*, Kolkata, Springer Nature.

5. Sharma, A., **Kumar, A.**, There, S., & Mandal, B.B. (2025). A Semi-Automated Framework for Coding Fatal Accident Data in Mines Using Natural Language Processing. *35th European Safety and Reliability & 33rd Society for Risk Analysis Europe Conference (ESREL-SRA).*

6. Sharma, A., Vardhan, H., **Kumar, A.**, There, S., & Mandal, B.B. (2025). Occupational Exposure to Whole-Body Vibration Among Women Dumper Operators: Assessing Health Risks in Indian Opencast Mines. *Asian Mining Congress*, Springer Nature.

FELLOWSHIPS AND AWARDS

- **Prime Minister's Research Fellowship (PMRF)** | 2021
- **Highest CGPA (9.5/10)** in M.Tech. in Safety, Health, and Environment, IIT Kharagpur

- **All-India Rank 268**, GATE 2014, Mechanical Engineering

CERTIFICATION

Advanced Certification in Data Science and AI, Indian Institute of Technology Madras & Pravartak Technologies | 2023