

Brief Curriculum Vitae

Correspondence address:

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Professional Summary

Accomplished mining engineer and researcher with over 23 years of expertise in underground coal mine design, safety, and reliability engineering. With over two decades of experience in academia, research, and industry collaboration, extensive contributions to mining methods, probabilistic stability analysis, rock bolt support systems, and real-time safety monitoring. Recipient of multiple national and international awards for research excellence.

Education

- **Ph.D. in Engineering**, Kyoto University, Japan (2009)
- **M.Tech. in Reliability Engineering**, IIT Kharagpur (2002) – GATE AIR 6th (MN)
- **B.Sc. (Engg.) in Mining Engineering**, BIT Sindri (2000) – 1st Rank

Work Experience

- **Chief Scientist** – CSIR-CIMFR, India (2025–Present)
- **Senior Principal Scientist** – CSIR-CIMFR, India (2020–2025)
- **Principal Scientist** – CSIR-CIMFR, India (2015–2020)
- **Postdoctoral Fellow** – KTH-Royal Institute of Technology, Sweden (2013–2015)
- **Senior Scientist** – CSIR-CIMFR, India (2009–2013)
- **Scientist-C & Scientist-B** – CSIR-CIMFR, India (2002–2009)

Research & Contributions

- Developed **probabilistic stability analysis models** for underground coal pillars.
- Pioneered novel rock bolt support systems, improving mine safety.
- Innovated **real-time safety monitoring systems** for underground mines.
- Led over 30+ R&D projects in mine design and safety.
- Published over **40 journal/conference papers** on coal mine safety and engineering.

Awards & Recognitions

- **Chevening CRISP Fellowship**, Oxford University, 2025
- **Certificate of Appreciation** for highest patent grant in CSIR-CIMFR, 2025
- **Best Paper Award**, Institution of Engineers (India), 2024
- **KTH Postdoctoral Award**, Swedish Government, 2013
- **Monbusho Scholarship**, Japanese Government, 2005
- **All India Rank 6th in GATE (MN)**, Ministry of HRD, 2000
- **Deshpande Atkinson Award**, North America BIT Alumni Association, 2000

Professional Memberships

- Fellow, Institution of Engineers (India) (2018)
- Life Member, Mining, Geological & Metallurgical Institute (2015)

Key Publications (Selected SCI Papers)

- **Novel Dual Height Rock Bolt Coupler** – IJMST (Impact Factor: 13.7)
- **Investigation of failure mechanism of inclined coal pillars** – Rock Mechanics & Rock Engineering (Impact Factor: 5.5)
- **Probabilistic stability analysis of coal pillars** – IJRMMS (Impact Factor: 7.0)
- **Evaluation of a novel pyramidal rock bolt bearing plate** – Engineering Structures (Impact Factor: 5.5)
- **Evaluation of energy accumulation, strain burst potential and stability** of rock mass-Engineering Geology (Impact Factor: 8.4)
- **Design of stable parallelepiped coal pillars** – Rock Mechanics & Rock Engineering (Impact Factor: 5.5)
- **Dump truck activity recognition** using vibration signal and convolutional neural network- Automation in Construction ((Impact Factor: 11.2)

Patents & Innovations

- **Dual Height Partial Recoverable Bolt** (Patent granted# 498159, 11-Jan-2024)
- **Real-Time Strata Monitoring System** (Patent granted# 533324, 16-Apr-2024)
- **Self-Retractable Cover System for Dump Trucks** (Patent granted# 540403, 31-May-2024)
- **A Dust Guard System for Vehicles to Reduce Air-Borne Dust**-(Patent Filed)
- **A System and Method for Activity Recognition of Mining Dumper**-(Patent Filed)
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Technical Expertise

- Mining methods & ground control
- Rock bolt & support system design
- Mine safety, geotechnical reliability & probabilistic analysis
- Machine learning for ground failure & fault prediction

Academic works

- Mr. Kumar Gaurav-AcSIR, Ghaziabad (PhD Supervisor), Awarded
- Mr. Amit Kumar-IIT BHU, Varanasi (PhD Co-supervisor), Continuing
- Mr. Pramod Kumar-AcSIR, Ghaziabad (PhD Supervisor), Continuing
- Mr. Pallav Das-AcSIR, Ghaziabad (PhD Supervisor), Continuing
- Mr. Sagun Mundu-AcSIR, Ghaziabad (PhD Supervisor), Continuing
- Mr. Kuntal Das-AcSIR, Ghaziabad (PhD Supervisor), Continuing

Declaration

I hereby declare that the above particulars are true to the best of my knowledge and belief.

(Dr. Ranjan Kumar)