INDIAN INSTITUTE OF TECHNOLOGY

KHARAGPUR – 721 302, INDIA

Sponsored Research and Industrial Consultancy

ADVERTISEMENT NO. : IIT/SRIC/R/AEH/2026/116, DATED 2026-11-18

Applications are invited through online for the following assignment in a purely time bound research project undertaken in the Department of Mining Engineering of this institute.

Name of the temporary assignment	:	1) Junior Research Fellow (JRF), No. of post: 1.
Name of the temporary research project	:	An AI Enabled Platfrom for Diagnosis Prognosis and Health Management of Mining Electrical Systems: A Case Study on the Drag Line (Project Code – R/AEH)
Dept./Centre/School	:	1) Mining Engineering
PI/Co-PI	:	Prof./Dr. Sunita Mishra
Application fee(In Rs.)	:	General / Male / OBC: 0 , Female : 0, SC/ST: 0
Last date of application	:	December 02, 2026
Name of the Sponsoring Agency	:	CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED(CMPDI (A Subsidiary of Coal India Limited/Govt. of India Public Sector Undertaking) Gondwana Place, Kanke Road, Ranchi -834031 Jharkhand (india))
Consolidated Compensation (per month)	:	1) upto 37000 (depending on qualification and experience)

Qualifications & Experience : 1)
Essential Qualification :
Post Graduate Degree in Basic Science OR Graduate / Post Graduate Degree in Professional Course selected through a process described through any one of the following:
a. Scholars who are selected through NationalEligibility Tests - CSIR-UGC NET including lectureship (Assistant Professorship) and GATE.
b. The selection process through National level examinations conducted by Central Government Departments and their Agencies and Institutions such as DST, DBT, DAE, DOS, DRDO, MoE, ICAR, ICMR, IIT, IISc, IISER, NISER etc.

Desired Experience :
Essential Qualifications and Eligibility Criteria
Candidates must possess either of the following qualifications:

1. M.Tech Degree:
M.Tech in Civil Engineering (Structural or Geotechnical Engineering), Mechanical Engineering (Design or Manufacturing), Mining Engineering, Tunnelling, Applied Mechanics, or any other allied engineering discipline.

OR

2. B.Tech Degree:
B.Tech in Civil Engineering, Mechanical Engineering, Mining Engineering, Applied Mechanics, or any allied engineering discipline.
- A valid GATE score is mandatory for candidates holding a B.Tech degree.
- However, B.Tech graduates from Centrally Funded Technical Institutions (CFTIs) with a CGPA greater than 8.0 may be exempted from the GATE score requirement, subject to applicable institute norms.
Essential Knowledge and Research Experience
Candidates must have a strong fundamental understanding of Solid Mechanics, particularly stressstrain behaviour, structural deformation, and mechanical response under different loading conditions.

Prior knowledge of Finite Element Analysis (FEA), numerical modelling, experimental stress analysis, strain measurement techniques, and programming would be desirable.
Scope of Research Work
The selected candidate will work on AI-enabled Structural Health Monitoring (SHM) of Heavy Earth Moving Machinery (HEMM) operating under varying geo-mining conditions.

The research will primarily involve experimental investigations and advanced numerical modelling to understand the structural response, deformation, and strain-field evolution of HEMM components under realistic operational loading conditions.

The candidate will be involved in:
1. Experimental measurement and analysis of strain and deformation fields in critical structural components of HEMM.
2. Development of advanced numerical models using Finite Element Methods (FEM) to simulate structural behaviour under varying loading and operating conditions.
3. Correlation and validation of experimentally measured strain fields with numerical simulation results.
4. Identification of critical stress concentration zones, deformation patterns, and potential structural failure mechanisms.
5. Application of Artificial Intelligence (AI) and Machine Learning (ML) techniques for structural health monitoring, damage detection, and predictive maintenance.
6. Development of an integrated experimentalnumericalAI framework for assessing structural integrity and improving the operational reliability of HEMM.
Desirable Skills: Familiarity with ANSYS, ABAQUS, LS-DYNA, MATLAB, Python, strain gauges, Digital Image Correlation (DIC), sensor-based monitoring, or AI/ML techniques will be an added advantage.

Note: A strong foundation in Solid Mechanics is essential. Prior experience in AI/ML is desirable but not mandatory, provided the candidate demonstrates an aptitude for computational modelling and interdisciplinary research.

Age Limit : 28 years. Age rules may be relaxed upon fulfilling sponsor agency rules if any.

Tenure : 24 Months or the termination of the project, whichever is earlier.

Note:1. The qualifications and experience prescribed are the minimum and mere possession of the same does not entitle a candidate to be called for the interview.
2. Age as on last date of advertisement.

Application fee shall be deposited in the following bank account through RTGS/NEFT/NET Banking etc. as under:
1).BANK NAME: STATE BANK OF INDIA(00202);2).BANK ADDRESS: P.O:KHARAGPUR TECHNOLOGY,DIST:MIDNAPORE;WEST BENGAL-721302;3).NAME OF BANK A/C: IIT SRIC-OM Account;4).ACCOUNT NO: 39502115210;5).IFSC CODE: SBIN0000202;6).SWIFT CODE: SBININBB339;
The transaction details(UTR No./Transaction ID etc.) should be mentioned in the Application Form.