Indian Institute of Technology (Indian School of Mines), Dhanbad

Office of the Dean, Research & Development

Sanction No and Date: ANRF/IRG/2025/001388/ENS **Dated:** 22/10/2026	**IIT (ISM) Dhanbad Project No: SRDP 1419 G**	**Date**: 17/11/2026

Project Staff (JRF) position under ANRF Project

Applications are invited under the sponsored project. The details are as follows:

Position	ANRF - Junior Research Fellow (JRF)
Number of Position (s)	01 (One)
Title of The Project	EchoPulse: A Self-Supervised and VR-Enabled Mechanism for Automated Cardiac Performance Analysis
Principal Investigator	**Prof. Annavarapu Chandra Sekhara Rao,** Associate Professor, Department of Computer Science & Engineering, IIT (ISM) Dhanbad, Jharkhand 826004. Email: acsrao@iitism.ac.in
Tenure of Project	Maximum three years or till the end of the project, whichever is earlier
Job Description (in maximum of 100 words)	As a Junior Research Fellow (JRF), you will develop self-supervised learning frameworks for echocardiographic video analysis, incorporating spatiotemporal feature extraction, contrastive learning, vision transformers, and cardiac motion estimation. You will implement automated segmentation, myocardial strain estimation, ventricular volume quantification, and ejection fraction prediction using deep neural networks. Your responsibilities will include integrating physics-informed constraints, uncertainty quantification, and explainable AI methodologies (SHAP, Grad-CAM) for clinically interpretable predictions. Additionally, you will develop VR-enabled interactive 3D cardiac visualization, conduct cross-dataset validation, evaluate model robustness using clinically relevant metrics, and contribute to research publications, technical documentation, and project deliverables.
Essential Qualification	B.E./B.Tech. or M.E./M.Tech./M.S. in Computer Science and Engineering, Artificial Intelligence, Data Science, Electronics and Communication Engineering, Biomedical Engineering, or allied disciplines from a recognized university/institute.
Desirable Qualification	• Hands-on experience in **Deep Learning, Self-Supervised Learning, Vision Transformers, Contrastive Learning, and Spatiotemporal Modeling**. • Proficiency in **PyTorch, TensorFlow, OpenCV, MONAI**, and medical image processing frameworks. • Knowledge of **Explainable Artificial Intelligence (SHAP, Grad-CAM), uncertainty quantification, and physics-informed neural networks**. • Familiarity with **3D medical image reconstruction, Virtual Reality (Unity/Unreal Engine), and interactive cardiac visualization**.
Age and Relaxation (if any)	35 years and As per the norms of the Government of India / IIT (ISM) Dhanbad
Fellowship	(37,000 INR + 20 % HRA)/month for first two years, and (42,000 INR + 20 % HRA)/month for third year. The Fellowship 42000/- INR in third year will be awarded after successful assessment.
Last Date & Time	**30/11/2026**, Online Application link:https://forms.cloud.microsoft/r/Vz0LceCzu8 Interested candidates are requested fill the online application (as per the link provided) and must attach all supporting documents, copies of publications, awards, recommendation letter, CV **with Photo**, GATE/NET/National level examination qualification certificate, etc.).

Shortlisted candidates will be notified of the date of interview. Mere possession of minimum qualification does not guarantee an invitation to the interview. Candidates will be shortlisted based on their merit and as per the requirement of the project. The interview will be conducted via video conferencing; a link for this purpose will be shared with the shortlisted candidates in due course.