



# Indian Institute of Technology Jodhpur

## Office of Research and Development

Advt. No.: IITJ/R&D(Advt.)/2024-25/093

19 February 2025

### **Project Recruitment**

Applications are invited from the citizen of India for filling up the following temporary position in the Sponsored Research Project at this Institute. The position is purely temporary, initially for a period of 01 Year, and same extendable but co-terminus with the duration of the project, on a contractual basis with consolidated pay. The requisite qualification, experience and other details are given below:

1.	Project No.	S/DRDO/JKM/20240210
2.	Project Title	Development of Multi-agent Amphibious Quad-copter System
3.	Name of the Project Investigator	Dr. Jayant Kumar Mohanta
4.	Duration for initial appointment	1 year (can be extended up to 3 years or till the end of project)
5.	Name of the Post	Senior Research Fellow
6.	Post	01
7.	Consolidate Pay	Rs 42,000/-+ HRA@18% per month
8.	Minimum Qualification and Experience	<p><b><u>Eligibility:</u></b></p> <ol style="list-style-type: none"><li>M.E./ M. Tech/ M.S. Mechanical Engineering / Electrical Engineering or related specialization or B.Tech. / B.E. Mechanical Engineering / Electrical Engineering or allied area selected through a process described through any one of the following: -<ol style="list-style-type: none"><li>Scholars who are selected through National Eligibility Tests - CSIR-UGC NET including lectureship (Assistant Professorship) and GATE.</li><li>The selection process through National level examinations conducted by Central Government, Departments and their Agencies and Institutions such as DST, DBT, DAE, DOS, DRDO, MHRD, ICMR, IIT. IISC, RISER etc.</li></ol></li><li>At least two years of Research Experience at JRF level or equivalent.</li></ol> <p><b><u>Desirable Qualification:</u></b></p> <ol style="list-style-type: none"><li>Knowledge of Matlab &amp; Simulink</li><li>Knowledge of Control system &amp; ability to write code in Matlab</li></ol>

		3. Knowledge ROS/ROS-2 with Hardwar implementation.
09.	Job Description	<ol style="list-style-type: none"> <li>1. Model and design multi-agent systems for drone formation and transformation in dynamic environments.</li> <li>2. Develop mathematical models for simulation and test algorithms in multi-agent scenarios using MATLAB and ROS2.</li> <li>3. Implement and validate formation and transformation algorithms using simulation software and real-time testing with 2-3 drones.</li> <li>4. Design collision avoidance algorithms for safe maneuvering during operations in complex, transmedia environments.</li> <li>5. Conduct real-time testing and performance analysis of algorithms, ensuring safety and efficiency across multi-agent interactions.</li> <li>6. Collaborate with teams to enhance robotic system performance in both simulated and physical environments.</li> </ol>
10.	Brief description of Project	<p>We are developing an innovative air-water amphibious quadcopter that can fly, rest on water, and dive underwater when required. This project combines the capabilities of UAVs (Unmanned Aerial Vehicles) and AUVs (Autonomous Underwater Vehicles), enabling extended mission times and enhanced operational flexibility. Applications include military operations such as sea patrolling, torpedo detection, and anti-submarine warfare.</p> <p>The project aims to address the challenge of stabilizing the motion of these quadcopters in the presence of environmental disturbances, such as unpredictable wind and ocean currents. We will focus on designing advanced control algorithms to ensure stability and robustness in dynamic conditions. Additionally, we will explore multi-agent formation control strategies, integrating both centralized and decentralized approaches, to enable efficient coordinated operations both in the air and underwater.</p>
11.	Maximum Age	35 Years
12.	Age Bar	Age will be calculated on the closing date of the online submission of the application. Relaxation in age for the category candidates only would be admissible as per Central Government Rules. Also kindly enclose the Caste Certificate along with the application.

The candidates possessing the requisite qualification and experience should apply through the **ONLINE process** up to **05 March 2025**.

**It is mandatory to send the soft copy of the application with all relevant documents to [recruitment\\_rnd@iitj.ac.in](mailto:recruitment_rnd@iitj.ac.in) (Please mention the advertisement number in the subject line of the email). Without documents, your application will not be considered. There is no need to send the hard copy.**

**General Instructions to Applicant(s)**

1.	The post(s) is purely temporary and contractual for a period of 01 Year and extension based on satisfactory performance, but co-terminus with the duration of the project
2.	Application, which is incomplete, not in prescribed format, without photograph or unsigned will be summarily rejected.
3.	Certificate in support of experience should be in proper format i.e. it should be on the organizations letter head, bear the date of issue, specific period of work, name and designation of the issuing authority along with his signature.
4.	Institute reserves the right to: a. Fix, modify or revise the eligibility conditions, age and selection criteria as per its requirements, at any time. b. Fill up the post, not to fill up the post or cancel the advertisement in whole or partly without assigning any reason. c. Place a reasonable limit on the total number of candidates to be called for the Written Test and/or Skill Test, Interview.
5.	The Institute shall verify the antecedents or documents submitted by a candidate at the time of appointment or during the tenure of the service. In case, it is detected that the documents submitted by the candidates are fake or the candidate has a clandestine antecedents/background and has suppressed the said information, then his/her services shall be terminated.
6.	Higher initial pay may be given to exceptionally qualified/deserving candidate.
7.	No TA/DA shall be paid to the candidates for attending the interview.
8.	No correspondence will be entertained from candidates regarding interview and reasons for not being called for interview.
9.	Canvassing in any form will be a disqualification.
10.	No interim correspondence will be entertained.
11.	No need to send hard copy.

Officer In-charge  
Research & Development