Department of Mechanical Engineering
NATIONAL INSTITUTE OF TECHNOLOGY KARNATAKA, SURATHKAL

Ref. No. 59/NITK/SERB/MECH/HK/2021-22/A9 15/03/2022

Advertisement for Junior Research Fellow (JRF)

Applications are invited for the position of Junior Research Fellow (JRF) in a research and development project **(SERB-CRG**) with following details:

Title of the project:

"Semi-active damping using controllable orifice for four wheeler automobile"

Principal Investigator:

Dr. Hemantha Kumar,
Associate Professor, Department of Mechanical Engineering,
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Co-Principal Investigators:

Dr. Debashisha Jena, Associate Professor, Department of Electrical & Electronics Engg. National Institute of Technology Karnataka, Surathkal, Mangalore-575025, Karnataka. Email: debashisha.jena.2409.ee@nitk.edu.in	Dr. Ranjeet Kumar Sahu, Dept. of Mechanical Engg., National Institute of Technology Karnataka, Surathkal, Mangalore-575025, Karnataka. Email: ranjeetsahu.j@nitk.edu.in

Name of the position: Junior Research Fellow (JRF)

No. of Positions/Vacancies: One

Qualifications:
Essential Qualifications:- M.Tech./M.E. in Machine design and allied areas with a minimum of 60% aggregate score (6.5/10 CGPA). Candidate must have qualified GATE examination (old gate score is also considered). Proof of M.Tech./ M.E certificate has to be provided during the time of interview.

Desired Skills:-

- Basic exposure to software such as MATLAB, ADAMS, ANSYS, Labview.
- Ability to work in a team, good communication skills and experience in experimental research for fabrication of setup.

Age Limit:-28 years (Preferrable)

Salary:-

- **Rs. 31,000/month (for JRF) + HRA (16%)**

Duration: 0**1year (approx.)** or up to the termination of project, subject to annual performance review. The candidate is encouraged to apply for Ph.D. at NITK, Surathkal.

How to apply: Interested candidates must apply with the following documents (1) Cover letter (2) Bio-data with passport-sized photograph, (3) Scanned copies of educational certificates and mark sheets, class XII onwards (4) GATE qualified certificateand (5) Scanned copies of Proof for research experience, special achievements and publications, if any.

The soft copies of all the above documents (pdf format) must be **emailed to the P.I., Dr. Hemantha kumar (hemantha@nitk.edu.in) by 17th April 2022**. The email address for correspondence is given above. Only shortlisted candidates will be intimated by email and called for **online interview**. The position is available immediately. Interview is most likely to be held during 4th week of April 2022.The appointment will be on a purely temporary basis co-terminus with the project.

About the project:

Total duration: 3 YEARS (2022-2025)

Funding Agency: Science & Engineering Research Board (SERB)

Project summary:

Suspension system plays an important role in ride comfort and handling characteristics of an automobile. The optimum value of damping ratios required for ride comfort and handling of vehicle are very different and in general a compromise is reached in designing a vehicle's suspension system. The suspension system designed by assuming a comprised value of damping ratio may have many shortcomings in ride comfort, ride handling and stability. Thus, frequency dependent suspension drives may help a great deal in overcoming these difficulties. The adaptable nature of the suspension system to the desired characteristics makes the drive safer and smoother. The different kinds of semi-active technologies that exist currently are variable stiffness systems, variable orifice dampers, magneto-rheological and electro-rheological dampers, mechanically controlled valves etc. A variable orifice damper doesn't have settling or in-use thickening limitations, perhaps the main reason to be used for seismic structures and also offer a great amount of controllability since the valve is electrically controlled. When a current input is provided, the electromagnetic field displaces the armature and in the process controls the orifice opening. The variable current supplied controls the level of opening of orifice and thereby, controls the flow of hydraulic oil providing a variable damping to the system.