# Department of Computational and Data Sciences
# Indian Institute of Science
# Bangalore - 560012

## Advertisement No: CDS/DS/Feb-2022

## Date: 21/02/2022

## Advertisement for Research Position(s)

Indian Institute of Science (IISc) now seeks to recruit multiple research staff for multiple government and industry funded interdisciplinary projects (Fluid Dynamics, PDE and Deep Learning).

**Specific Roles & Responsibilities**: The primary task will include the following.

- Developing deep learning models and algorithms for turbulent fluid flow simulations using physics inspired loss functions
    - You will work in either ocean flow or flow in a wind farm
- Understanding the physics of the flow use case and translate that to new loss functions, deep neural network architectures, and training/validation frameworks
- Working with CFD data and geophysical model/observation data
- Writing code using Tensorflow, Keras and/or DeepXDE and NVIDIA Modulus/MatX packages
- Presenting results and writing journal/ML conference papers

**Essential Qualifications**:

- Project Associate – Undergraduate (B.Tech, BE, B.Sc) or
- Junior Researcher – Masters level (M.E., M.Tech, M.Sc or equivalent) or
- Postdoctoral Researcher – Ph.D.
- Subjects: Mechanical, Aerospace, Chemical, Civil, Electrical, Mathematics and Computing, Computational and Data Sciences, Computer Science and Engineering or equivalent subjects.
- Must know: Linear Algebra, Probability, Programming Concepts (computational thinking) and at least one of the following three disciplinary areas
    - Fluid Dynamics and Numerical Solution of PDEs, Coding in CFD packages
    - Geophysical Fluid Dynamics, Ocean Dynamics, and Data Assimilation
    - Deep Learning, Designing Neural Networks, Training/Validation, Numerical Optimization, Bayesian Inference, Coding in deep learning frameworks
- Ability to learn new things quickly, at depth and apply them in practice correctly
- Familiarity with Python packages (Tensorflow/Keras) is desired.

**Important**: If prior experience is only in one of the disciplinary areas, you must show willingness to learn the other discipline. Please revise Linear Algebra, Probability, Programming Concepts before appearing for the interview.

In all cases, comfort of working in Linux, use of version control and maintaining code hygiene are required. The candidate is expected to have good communication skills (speaking and writing) and should be willing to work in a team environment.

**Salary** – Consolidated salary range is given below (Subject to change depending on experience and IISc rules). No separate HRA will be provided. Campus accommodation is not available for project staff.

    (i)       Project Assistant Rs. 20,000 – Rs. 31,000 p.m.

    (ii)      Junior Researcher Rs. 20,000 – Rs. 50,000 p.m.

    (iii)     Post-doctoral Researcher Rs. 55,000 – Rs. 1,10,000 p.m.

**Terms of Appointment**: This is a long-term contract appointment, initially for one year and renewable thereafter based on an annual evaluation of performance. Initial salary will be fixed on your skills, interview performance and our judgement of which project is suitable for you. At the end of one year, salary can be revised upwards on superior performance. Appropriate bonus will also be given based on deliverables in the first year. Our lab is in IISc Bangalore, and the position is envisaged to be in-person. In exceptional cases, we are open to remote working (subject to mandatory visits as needed by IISc).

**Conversion to Ph.D.**: Outstanding candidates at the (pre-doctoral levels) will be considered for admission to our regular Ph.D. program and stand a good chance in gaining an accelerated Ph.D. (subject to all IISc norms and regulations)

**Indirect Perks:** Coaching for applying to doctoral programs, faculty positions (for post-docs), teaching opportunities, industry networking, start-up placement support, travel to national & international conferences, state-of-the-art computational facilities, laptop

**How to Apply**: Interested candidates may send their resume (preferably in pdf format or website), with subject marked "Advertisement No. CDS/DS/Feb-2022" by email to: deepakns@iisc.ac.in . In your email, please mention if you prefer Ocean Flow or Wind Farm project. Candidates should send the link to their git repository. In the resume, underline provide evidence to meeting the essential qualifications listed above.

**Online Interview**: If your application is successful, you should appear for an online interview to be scheduled on a mutually convenient time.

**Last date for application**: 1st review of applications will be completed on March 6, 2022. Thereafter this advertisement will be a standing advertisement until the position is filled.

**Anticipated Start Date**: April 2022

**Principal Investigator:** Dr. Deepak Subramani. Website: http://cds.iisc.ac.in/faculty/deepakns/ ; http://questlab.iisc.ac.in