Research Assistant Position in Data-Driven Modeling of Air-Sea Interactions

Positions Description

The Flow Dynamics and Turbulence Laboratory (FDT Lab) at the Department of Mechanical Engineering of the University of Texas at Dallas (UT Dallas) invites highly motivated graduate students to join our research team in the upcoming Spring, Summer, or Fall of 2024. We are actively looking for a Ph.D. student with a strong background in air-sea interactions and data-driven approaches as part of a recently NSF-funded research initiative in collaboration with PI Giometto at Columbia University. This initiative will focus on developing data-driven-based surrogate parameterizations for skin friction and form drag over surface waves by integrating laboratory measurements of wind-wave interactions with a high-fidelity digital twin model of the laboratory system.

Required Qualifications

- Bachelor/Master of Science in Mechanical Engineering, Civil Engineering, Ocean Engineering, or an equivalent terminal degree by the date of hire.
- Strong background in experimental fluid mechanics, particularly flow visualization techniques, and data-driven approaches.
- Proficiency in MATLAB, Python, and LabVIEW programming languages.
- Prior experience with AI-based approaches and data-driven techniques for fluid mechanics.
- Strong research interests in fluid dynamics, turbulence, turbulent boundary layer flows, air-sea interactions, free surface processes, and gravity waves.
- Capability to work independently and as part of a team, with excellent interpersonal, written, and oral communication skills.

Preferred Qualifications

- Prior documented experience with particle image velocimetry (PIV), shadowgraph, or schlieren techniques.
- Demonstrated experience and track record in developing LabVIEW scripts and APIs for target-specific applications and working with data acquisition (DAQ) systems.
- Research experience with a record of peer-reviewed publications in fluid dynamics, turbulence, turbulent boundary layer flows, air-sea interactions, free surface processes, or gravity waves.

Application Instructions

Interested applicants should meet the minimum admission requirements of the Office of Admission and Enrollment and the Department of Mechanical Engineering. Qualified candidates are encouraged to contact Dr. Kianoosh Yousefi at kyousefi@utdallas.edu with their **CV**, **unofficial transcripts**, and **1-page research statement** briefly discussing their research interests and highlighting their experience in LES code development. For the email subject line, use "**Prospective Ph.D. student: ASI-ML**".

Before reaching out, you are also advised to read the FDT Lab participation manual and recent publications to ensure our mentoring and research philosophies are truly in line with your passions. Please note that only complete applications with all requested documents will be considered. Given the large volume of incoming applications, only those selected for further consideration will be contacted back.

About UT Dallas and Dallas–Fort Worth Area
Located in the heart of the 4th largest metropolitan area of the nation, UT Dallas enrolls over 30,000 students. UT Dallas is among the top universities in the country and highly ranked in value, ethnic diversity, and low student debt, based on the US News & World Report. The Department of Mechanical Engineering at UT Dallas was founded in 2008, offers B.S., M.S., and Ph.D. degrees, and, according to US News & World Report, is ranked third in Texas. The department is home to more than 1,100 undergraduate students, 200 graduate students, and 34 faculty. It is also home to a unique Boundary Layer and Subsonic Wind Tunnel (BLAST) for renewable energy research and supports UTD Wind and WindSTAR research centers. The Dallas–Fort Worth Metroplex is one of the nation's largest urban areas, with shopping, entertainment venues, museums, art galleries, and places for outdoor running, biking, hiking, and skating. Foreign Policy magazine named Dallas one of only five US cities in the top 25 in its projection of the most dynamic cities in the world in 2025.

Equal Employment Opportunity
The University of Texas at Dallas, the Department of Mechanical Engineering, and the FDT Lab are all committed to providing an educational and working environment that is welcoming, respectful, and inclusive of all members of the university community. The University prohibits unlawful discrimination against a person because of their race, color, religion, sex (including pregnancy), sexual orientation, gender identity, gender expression, national origin, age, disability, genetic information, or veteran status.