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Job Information

Organisation/Company: *National Technical University of Athens (NTUA)*
Research Field: *Engineering, Wind Energy, Data Science*
Researcher Profile: First Stage Researcher (R1)
Country: *Greece*
Application Deadline: *November 30th*
Type of contract: *Temporary (3 years)*
Job Status: *Full Time*
Offer Starting Date (Vacancy Opening): *November 1st*
Is the job funded through the EU Research Framework Programme?: YES
Marie Curie Grant Agreement Number: 101168673
Is the Job related to staff position within a Research Infrastructure?: NO

Offer description

TWEED Project

TWEED is looking for 12 talented and motivated Doctoral Candidates (DCs) with the skills, knowledge and enthusiasm to work as part of a network to advance the field of digitalistion within the wind energy sector.

The "Training Wind Energy Experts on Digitalisation (TWEED)" Doctoral Network (DN) aims to train the next generation of excellent researchers equipped with a full set of technical and complementary skills to develop high-impact careers in wind energy digitalisation.

Co-funded by the European Commission through the Horizon Europe Marie Sklodowska Curie Doctoral Networks Programme, the TWEED network offers **12 Doctoral Candidates (DCs) positions** to provide high-level training in the new emerging research field of Wind Energy Data Science and Digitalisation.

An outstanding research-for-innovation programme, and a unique training programme that combines hands-on research training, interactive schools and hackathons, innovation management and placements with industry partner organisations has been designed for the DCs who will participate in the network. Alongside the exciting research topics related to wind energy data science, the research programme also includes state-of-the-art technology to develop a new Wind Energy Data Science Hub that will facilitate a virtual research environment to foster collaboration, data sharing and testing of innovative solutions to significantly increase the value of wind energy.

The network will provide an interdisciplinary and inter-sectoral context to foster creativity in tackling wind energy data science and digitalisation challenges by developing solutions for commercial exploitation.

DCs will be trained in business innovation to extend their focus beyond the academic context, to be able to identify added-value products or services with the guidance from established researchers and entrepreneurs. As a result, a research-for-innovation mindset will be developed to provide enhanced career prospects for the fellows, equipping them with a complete set of thematic, technological and innovation skills.

DCs are expected to i) conduct high quality, original academic research in the fields of Wind Energy, Digitalisation, Data Science and Computer Science, ii) participate in the network's planned training-dissemination activities and mobility plan, iii) collaborate with fellow researchers, with the goal of advancing and promoting the network's objectives.

The most talented and motivated candidates will be selected to participate in the network's interdisciplinary collaborative research training, preferably starting in February 2024. The assessment shall be carried out by the TWEED recruitment team.

Internal code of the position: *DC10*

Host Institution: *National Technical University of Athens*

Brief description of the project: *Traditionally, the assessment of the lifetime of wind turbines relies on the application of safety factors on loads predictions by physically based aeroelastic tools that incorporate the level of uncertainty of its design parameters. The aim of the present research project is to develop and test, innovative probabilistic fatigue analysis methods which will be used for the assessment of the lifetime of wind turbines based on consistent levels of reliability for all components. The focus of the work is on the assessment of the remaining lifetime of operating wind turbines, within specified levels of uncertainty for the design parameters (environmental, structural, aerodynamic etc.), with the objective to provide reliable estimates for lifetime extension. For the prediction of the load envelope of the wind turbine, both physically based but also data driven, machine learning models will be employed. Furthermore, for assessing the inflow conditions experienced by the turbine within the wind farm (a crucial factor for assessing fatigue), data assimilation methods will be employed that leverage high fidelity CFD results to enrich a low cost engineering wake model. The new wake model will be able to better account for complex wind farm effects such us multiple wake interactions and meandering. The validation of the advances will be done with a prototype integrating data and knowledge resources identified in the other WPs of the project.*

Expected Results: A new innovative probabilistic framework for the assessment of wind turbines' fatigue. Various surrogate data-driven models for the assessment of wind turbines' fatigue loads that will be trained by existing physically based models. Application

of innovative data assimilation techniques to the development of a new wind farm wake models.

Secondments: *One industrial secondment (6 months / Month 18-23) at iWind Renewables (Dr. P. Chaviaropoulos) for training on machine learning techniques and fatigue loads prediction and one academic secondment (3 months / Month 28-30) at DTU (Dr. Ju Feng) in which, the methods developed will be tested in an application example that will be agreed upon with DTU.*

Personal Supervisory Team: *Assoc. Prof. Vasilis Riziotis, Dr. Ju Feng, Dr. P. Chaviaropoulos*

Requirements

Research Field: *Engineering, Wind Energy, Data Science*

Education Level: Master Degree or equivalent

Skills / Qualifications:

- Applicants must be proficient in the English language.
- Master degree or equivalent obtained by the time they are appointed. Students currently in the final year of a Master's degree are encouraged to apply but should note that if selected, they will be expected to start their PhD in the first quarter of 2025.

Specific requirements:

- Background in the areas of: structural engineering, aeroelasticity, wind energy and machine learning methods is required.
- Experience with one or more programming languages(e.g. Fortran, C++ or Python)
- Excellent writing and communication skills in English
- Ability to work in a team and independently.
- Willingness to follow the mobility plan of the programme (conduct secondments in the country of the host institute or abroad)
- The successful candidate must also fulfill the requirements for admission to a PhD program at NTUA (holder of a Master Degree and excellent knowledge of English)

Languages: English

Level: Excellent

Additional Information

Benefits

You will be hired for 36-months with the competitive conditions and salary adapted to the living costs in each host country, set by the MSCA Doctoral Networks (DN). The MSCA DN programme offers a highly competitive and attractive salary and working conditions. The successful candidates will receive a salary in accordance with the MSCA regulations for DCs, according to the national rules of the country with full social security benefits.

The successful candidate will receive a financial package plus an additional mobility and family allowance according to the rules for Doctoral Candidates (DCs) in an EU Marie Skłodowska-Curie Actions Doctoral Networks:

- Living Allowance of € 2774,40/month to be paid in the currency of the country of the Host Organisation.
- Mobility allowance of €600/month to be paid to all DCs recruited.
- Family allowance of €660/month to be paid depending on DCs family status

The net salary to be paid by NTUA will be calculated by deducting the applicable employer taxes and social security contribution for each country, from the amounts mentioned above **and will be aproximately €2000-2400/month (depending on the family status)**. Additional deductions may apply based on your personal circumstances and local tax/social security regulations.

In support of families with young children, flexible working hours will be offered to the DC whenever it is feasible within the requirements of the project.

Following the EU's commitment to DEI, the TWEED network and NTUA encourages and promotes the participation of under-represented groups such as women in technical careers, people from diverse economic and ethnic backgrounds, people with disabilities, those who identify as neurodivergent and LGBTQA+. The NTUA community aims to exercise a policy of equal opportunities at all times.

Additional information can be found in Information Note for Marie Sklodowska-Curie fellows in Doctoral Networks.

Eligibility criteria

All applicants must, at the date of the recruitment, comply with the following ELIGIBILITY CRITERIA:

- Candidate status: At the time of recruitment, applicants must not hold a doctoral degree or equivalent.
- Mobility Rule: Applicants can be of any nationality. However, applicants must not have resided or carried out their main activity (work, studies, etc.) in the country of the recruiting organisation for more than 12 months in the 3 years immediately

before the appointment. This excludes short stays such as holidays or compulsory national service

Candidates are required to document in their applications their compliance with the eligibility criteria. To prove their eligibility, candidates can use supporting documents such as studies, residense or work certificates.

Selection Process

Selection process complies with the guidelines set forth in the European Charter for Researchers, including the Code of Conduct for Recruitment of Researchers.

Candidates will be requested to provide their consent for their application documents to be shared among the members of the recruitment team for review (including other institutions than the institution to which they originally addressed their application). Additionally, they will be requested to consent (or decline) to having their application forwarded to another host institution within the network, should their profile be better suited for a different position. Personal documents and information of the candidate will be treated confidentially.

Eligibility check

- The Recruitment Team of TWEED will gather the information from all candidates and will check that they comply with the eligibility criteria and that the applications are complete, in English, and submitted before the deadline.
- The initial check of the eligibility criteria will have to be formally approved by the host institution at the time of recruitment of the appointed candidates.
- Ineligible candidates will be notified via email.

Assessment:

A Selection Committee will be set up at the host institution, led by the Main Supervisor. The Selection Committee will assess all candidates according to their academic profile, personal motivation, relevant background, professional experience, scientific knowledge, transversal skills, soft skills and English proficiency. The Selection Committee will short-list at least the best 3 candidates.

Interview

The Selection Commitee will interview the short-listed candidates and will produce a ranked list of candidates that qualify for the position.

Decision

According to the procedure established in TWEED, the Selection Committee will submit its list of preferences to the Supervisory Board (the project's governing body). The SB will prepare the final ranking of candidates for each position.

Communications

Candidates will be informed of the status of their application during the selection process.

How to apply

The application must include:

- Detailed CV:
  - Candidate personal information
  - Information about graduate and postgraduate degree and qualifications
  - Work experience
  - English proficiency
- Eligibility information, countries of residence for the last 3 years
- Motivation letter
- The names and contact information of two referees.
- Written agreement of the permission to share information with the TWEED project Recruitment Team.
- Identification of other possible positions at TWEED in which you may be interested or which have also been applied for.

The application should be sent *by email to: vasilis@fluid.mech.ntua.gr*

Work location

Number of offers available: 1

Company/Institute: *National Technical University of Athens*

Country: *Greece*

City: *Zografou*

Postal Code: *15780*

Street: *9 Heroon Polytechniou*

About *NTUA*

NTUA is the oldest engineering Higher Education Research Institute in Greece with about 8500 undergraduate and about 1500 post-graduate students. NTUA is divided in 9 Academic Schools covering all engineering disciplines. The proposed PhD Project will be conducted at the Laboratory of Aerodynamics (LA-NTUA) of the School of Mechanical Engineering. Main objective of the educational and research activities of NTUA Laboratory of Aerodynamics is the theoretical (computational) and experimental analysis of flow problems that cover a broad range of applications. In this context, problems of external aerodynamics with application to fixed aircraft wings, helicopters, wind turbines, buildings

etc. as well as fluid/structure interaction problems are part of its research activities.

The research group at LA-NTUA has been active in the field of Wind Energy RTD since the early 90's and has participated in more than 50 EU (JOULE, BRITE, ENERGY, GROWTH, FP6, FP7, Horizon programs) and national research projects on various topics including wind turbine rotor aerodynamics and noise, wind turbine aeroelasticity and control, wind farms design and performance assessment.

Contact

Contact information of the Main supervisor: vasilis@fluid.mech.ntua.gr (attn. Vasilis Riziotis)

Main contact of the project: tweedproject@unizar.es