Opening for PhD student position – Fusion of Models and Data for Enriched Evaluation of Structural Health, project no 2019/01/Y/ST8/00060

In the frame of Alphorn project entitled: "Fusion of Models and Data for Enriched Evaluation of Structural Health" funded by the National Science Centre, Poland, Institute of Fluid-Flow Machinery, Polish Academy of Sciences, Gdańsk, Poland will like to hire a PhD student

About the project

We are looking for a talented person holding MSc title, who is interested in continuing his scientific work and possibly opening a doctoral dissertation. The project provides employment for one scholarship holder. The research will be realised at the Department of Mechanics of Intelligent Structures.

The aim of research will be a enhancing use of typical Vibration-based Structural Health Monitoring (SHM) tools into the higher levels of SHM, and further exploring exploitation of Non-destructive evaluation (NDE) tools, namely Guided Wave (GW), and Electro-Mechanical Impedance (EMI) schemes, for continuous monitoring and online damage assessment. For accomplishing this goal on both the SHM and the NDE side we rely on the fusion of models with data. Naturally, this merger may only be achieved on the basis of models that are computationally efficient in terms of both accuracy and speed of calculation.

In the frame of the project, the team at IMP PAN will develop the Spectral Element-based approach for the use of Guided waves and electromechanical impedance based structural health monitoring. In addition the modelling data will be used in addition to experimental data to develop a data enriched assessment framework. This framework will be validated on laboratory scaled models.

The offer

We offer a PhD position
- in the Department of Mechanics of Intelligent Structures, IMP PAN Gdańsk, Poland (http://www.imp.gda.pl/en/o4/z1/).

A full time position funded with a PhD scholarship is offered for 36 months and amounts to approximately 4200 zł/month. The expected start date is October 2020.

Eligibility criteria

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.

Tasks

1. Numerical research related to methods for modelling of propagation of elastic wave in as well as electro-mechanical impedance studies.
2. Experimental investigation for fatigue and delamination detection in composite structures
3. Development of algorithms for damage detection in Matlab
4. Development of algorithms for interfacing and synchronizing between the apparatus
5. Signal processing and results analysis.
6. Preparation of reports based on results analysis.
7. Preparation of journal and conference publications.
8. Presentation of results at scientific conferences related to research topics.
9. Communication and discussion of results within the research team.
10. Communication of results to general public through participation in outreach activities

Skills/Qualifications

1. Masters in mechanical engineering, material science, physics or related fields.
2. High average grade obtained during studies.
3. Good knowledge of written and spoken English.
4. High motivation for scientific work and a strong commitment to research work.

Specific Requirements

We especially seek candidates who:

- possess knowledge about numerical methods and modelling in FE modelling software,
- have programming skills,
- are able to write code in Matlab language.
- mobility and flexibility for attending conference and research stays abroad.

In addition, the following will be assessed:

- the candidates' scientific track record (publications, conferences, projects, scholarships, etc.),
- the prizes and distinctions of the candidate resulting from the research carried out.

Selection procedure

Selection process is in accordance to National Science Centre regulations.

1. Submission of applications is possible through September 11th, 2020.

2. The results will be announced: 15th of September 2020.
3. Form of applications: Applications in English can be sent by e-mail to job@imp.gda.pl with a subject "PhD student in Alphorn Project application attn.: Paweł Kudela".
4. Candidates interested in applying for the positions should submit the following documents:
   - Cover letter
   - CV / scientific resume
   - copy of the certificate of Master degree
   - the list of scientific achievements (publications, participation in research projects, participation in conferences, awards, scientific stays, etc.)
   - optional: letter(s) of recommendation obtained from people (e.g. supervisors, former managers) directly cooperating with the candidate.
5. The application must contain information about the educational background and work experience.
6. Please, attach the requested documents in the PDF format.
7. During the recruitment process the selected candidates may be invited for an interview (in person or via internet).
8. The result of the recruitment procedure will be sent to the candidates via email.
9. Please include in the application the following statement:

   "I hereby authorize to process my personal data included in my application for the needs of the recruitment process (in accordance with the Act of 08.20.1997 r. on personal data protection - Dz. U. No 133, item 883) ".

If needed, selected Candidates may be invited for an interview (in person or via videoconference on Internet).

Additional questions could be sent by email to Paweł Kudela: pk@imp.gda.pl