Departamento de Ingeniería Mecánica y de Materiales

Universitat Politècnica de València

Position for a Marie-Curie PhD student in Computational Mechanics at Valencia, Spain

http://ec.europa.eu/euraxess/index.cfm/jobs/jobDetails/33752603

The Research Centre in Vehicles Technology (CITV) in the Department of Mechanical and Materials Engineering of the Universitat Politècnica de València (Valencia-Spain) has an opening for a 3-year PhD position under an EU Marie-Curie Initial Training Network (Call: FP7-PEOPLE-2011-ITN) on "*Integrating Numerical Simulation and Geometric Design Technology* (INSIST)".

The student will be working in the area of automatic generation of Finite Element models from CT-scan data. Cartesian adapted meshes built over a hierarchical data structure will be used for accurate and computer-efficient models definition.

Description

The objective of the INSIST ITN is the development of the next generation design/simulation methods based on isogeometric analysis. The idea of isogeometric analysis is to use the same functions that are used to approximate CAD models to approximate the unknown fields for engineering analysis and simulation. The key outcome of this research is a system/methodology that allows the analysis, simulation and design of engineering products in a more efficient way. We aim to extend the isogeometric analysis concept of Hughes and co-workers who focused on the unification of CAD and CAE whereas we aim to generalize this idea to unify pre-processing (in general) and analysis. The research programme is structured into 4 main sub-programmes:

- WP1: CAD Feature Processing (2 individual projects).
- WP2: Pre-Processing and Mesh generation (4 individual projects).
- WP3: Numerical Analysis/CAE (6 individual projects).
- WP4: Voxel based analysis (1 individual project).

WP2 consist of four projects. This post corresponds to project ESR6 within program WP2 and is aimed at devising a methodology for the automatic generation of accurate and efficient Finite Element models from CT-scan data. The main pillar of this development is the use of Cartesian grids, well suited to CT-scan data, with local mesh refinement capabilities via adaptive voxel subdivision for an accurate geometry representation of the geometry with the minimum possible amount of information. An underlying hierarchical data structure of the Cartesian grid will also be essential for computer efficiency. Further model accuracy will be gained by means of the use of NURBs for surface representation.

A suitable candidate will have a master degree in Engineering, Computer Science, Mathematics or a closely related subject. They must have proven excellent programming and mathematical skills, and experience in discretisation techniques (FEM, XFEM, GFEM). The successful candidate will participate in a research training network of an EU-funded Marie Curie ITN and will work in a highly interactive international environment with other Marie-Curie PhD students, researchers and industry and will execute the part of the work during extended visits at the partner institutions outside Spain.

Nr. Job Positions: 1

Research Fields: Engineering - Mechanical engineering

Career Stage: Early stage researcher or 0-4 yrs (Post graduate)

Research Profile: First Stage Researcher (R1)

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Benefits

The employee will enjoy the benefits of the Marie Curie scheme (Mobility allowance, career exploratory allowance, etc.). See ftp://ftp.cordis.europa.eu/pub/fp7/docs/fp7-mga-annex3intramulti_en.pdf

Salary: 37,000€ living allowance + 9,000€ mobility allowance

How to apply:

Please send via E-Mail before 31-January-2012:

- a C.V. giving information about your studies or professional career
- Academic Record
- 2 letters of recommendation preferably from university teachers
- a motivation letter
- a summary (1000 words) of the bachelor or master thesis

To: Dr. Juan José Ródenas E-Mail jjrodena@mcm.upv.es

A final selection period will open after this pre-selection period to satisfy local regulations.

University Partners

Bauhaus University - Weimar

- 3 Positions: http://ec.europa.eu/euraxess/index.cfm/jobs/jobDetails/33751168

Johannes Kepler University - Linz

- Position 1: http://ec.europa.eu/euraxess/index.cfm/jobs/jobDetails/33750894
- Position 2: http://ec.europa.eu/euraxess/index.cfm/jobs/jobDetails/33750897
- Position 3: http://ec.europa.eu/euraxess/index.cfm/jobs/jobDetails/33750888

Cardiff University

- http://www.cf.ac.uk/jobs/comsc/research-assistant--research-associate-4782.html

Industrial Partners: Cenaero , InuTech, Simpleware

Associated University Partners: University of California-San Diego, Carnegie Mellon University

Associated Industrial Partners: Transcendata , Numerical Geometry Ltd

Requirements:

Eligibility requirements to the Marie-Curie ITN program states that at the time of appointment, the researcher may not have resided or carried out his/her main activity in the country of the beneficiary for more than 12 months in the 3 years immediately prior to his/her appointment.

Required Education Level

- Degree Master Degree or equivalent
- Degree Field Engineering

Required Languages

- Language ENGLISH
- Language Level Good

Required Nationality: Any nationality

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