denisc

Finite Element Analyst / Programmer - Galway, Ireland

W: http://www.worky.com/profile-denisc

Computational Analyst

denisc's Professional Experience

2009 - Present **University of Limerick - Materials and Surface Science Insttute - Finite Element Analyst**

I am currently employed as a finite element analyst, modelling the structural performance of advanced composite materials. Using ABAQUS detailed 3D models of bonded composite joints are being developed incorporating both interfacial fracture and damage mechanics. A computational test programme based on DOE/Taguchi methods will be used to investigate how material parameters affect the failure load and joint deformation under quasi-static and impact loading conditions. Such conditions may, for example, be encountered on a wind turbine or aircraft wing. The model output will be used to produce design envelopes, generated from response surface techniques for engineers in the aerospace and renewable energy sectors.

Key Skills ABAQUS, engineers

2009 - Present **Galway Mayo Institute of Technology - Lecturer in Energy Systems (part time)**

I am responsible for the delivery of the energy systems lecture course on the MSc Environmental Systems programme, also the supervision of five MSc theses on energy related topics.

2006 - 2009 **Marine Computational Services - Senior Software Engineer**

Senior Software Engineer - finite element analysis.

Key Skills ABAQUS, Ansys, Engineer, Finite Element Analysis (FEA), Finite Element Methods, Fortran 90, Senior Software Engineer, Software, Software Engineer

2004 - 2006 **National Centre for Biomedical Engineering Sciences - Senior Research Scientist**

As a Senior Researcher it was my responsibility to lead a major research project in the area of musculoskeletal biomechanics. This includes macro-level, micro-level and cellular level computational modelling of bone and cartilage. In particular my duties broke down as follows:

Parallel Finite Element Solution Codes
I have developed two 3D finite element solution codes, suitable for parallel implementation. These are used in the analysis of trabecular bone architectures where the mesh is generated from CT imaging. The programmes are written using Intel Fortran 90 with OpenMP parallelisation protocols and both are suitable for shared memory architectures. The first is for linear (small strain) problems, the second version allows for finite strain of a general hexahedral element. Both are designed to be suitable for mesh sizes in excess of 1 million elements.

Project Manager on the PRTLI project, 'Bone for Life'
• Preparation of regular progress reports for the HEA and liaising with TCD and RCSI on technical and managerial issues. Also, submission of competitive funding proposals.
• Development of Finite Element software, suitable for implementation on parallel computers.
• Recruitment and supervision of PhD / MSc students.

Postgraduate Supervision
I was responsible / co supervisor of three PhD students in the biomechanics research group and previously one MSc student in the postgraduate school of Biomedical Science.

Key Skills FORTRAN 90, OpenMP, project manager, recruitment, Reports, supervision, Supervisor

2000 - 2004 **Tyndall National Institute (NMRC) - Research Scientist**

1998 - 2000 **Waterford Institute of Technology - Lecturer in Mechanical Engineering**

denisc's Education and Qualifications

2003 **Masters/PostGrad - Applied Mathematics**

Open University UK

MMath in pure/applied mathematics.

Subjects: Differential Geometry, Complex Analysis, Probability, Electromagnetism, Numerical Methods, Non-Linear Dynamics, Optimisation, Number Theory, Metric Spaces, History of Mathematics.

1999 **PhD/Doctorate - Heat Transfer**

UCD

THESIS: MODELLING OF INTERFACE HEAT TRANSFER IN METAL SOLIDIFICATION

An investigation into the solidification of aluminium alloys was undertaken. The evolution of thermal boundary conditions, which are necessary to model solidification processes, were determined using inverse heat conduction techniques. Results obtained have been published in peer reviewed international journals, and presented at international conferences. This work was nominated for the Howe Silver medal by the American Society of Materials.

1993 **Bachelor/Degree - BE, Mechanical Engineering**

University College Dublin

denisc's Additional Information

Links

Linkedin Profile - http://www.linkedin.com/pub/denis-c-o-mahoney/25/137/442