

Nikolaos Papadakis

Neofytou Oikonomou 47
Heraklion Crete,
Greece, GR 71409

Tel: +30-2810233540
Mobile: +30-6948834353
Email: npapnet@gmail.com

Personal Details

Date of Birth: 4th May 1974

Place of Birth: Modena, Italy

Nationality: Greek (EU)

Education

PhD in Engineering	University of Warwick, UK	1998-2002
---------------------------	----------------------------------	------------------

Thesis:

Strain rate effects on the mechanical properties of thermoplastic composite materials.

Contribution:

- Proposed a methodology for characterisation of the tensile longitudinal, tensile transverse and shear mechanical properties and their damage evolution under variable strain rate.
- Applied and validated the methodology on a thermoplastic composite material.
- Manufactured and tested specimens (monolithic composite laminate, core materials and sandwiches) with different equipment and different modes.
- Developed software for the efficient processing and handling of raw data and also for the statistical processing of data.
- Published extensively and presented work in both academic and industrial community.
- Validated a composite material model of an commercial explicit FE code.

MSc in Manufacturing Systems Engineering	University of Warwick, UK,	1997-1998
---	-----------------------------------	------------------

Core Subjects:

Advanced Analytical Techniques	Metallic Materials	Problem Solving with Statistics
Context of Business	Information System Design	Automation and Robotics
Polymers and Advanced materials	Advanced Materials and processes	Product Design and Development Management
Quality, Reliability and Maintenance	Logistics and Operations Management	Financial Analysis and Control Systems

Dissertation:

An explicit FE method for modelling the dynamic performance of discrete joint systems and failure modes for the axial crushing of metallic members

MEng in Mechanical Engineering	Aristotle University, Greece	1992-1997
---------------------------------------	-------------------------------------	------------------

Production and Industrial Engineering Modules:

Industrial administration and organisation	Manufacturing Plant Administration	Simulation of Industrial Network Flows
Analysis and Evaluation of Investments	Total Quality Management	Management of Technology and Innovation
Marketing and Advertising	Reliability Theory	Quality Control
Forecasting Techniques	Project Management	Operational Research(I, II)
Quantitative Techniques (I, II, III)	Information system design	

Energy Modules:

Thermodynamics of Pure Substances	Environmental Protection Technology	Management of Energy Resources
Vehicle Theory	Thermodynamics of Mixtures	Cooling – Heat - Air conditioning
Internal Combustion Engines (I, II)	Economics of Energy Systems	Renewable energy Sources
Aerodynamics	Heating	Waste Disposal
Fluid Mechanics (I)	Heat Transfer	Turbines(I)

Mechanical Modules:

Science and Technology of Materials	Introduction to Mechanical Processes	Material Subtractive Mechanical Processes
Flexible Manufacturing Systems and CAM	Heat Processes and Phase Transitions	Analysis and Synthesis of Mechanisms (Robotics)
Oscillations and Machine Dynamics	Automation and Control systems	Failure of Materials
Selection and Failure of Materials	Mechanical Drawing (I, II, III)	Strength of Materials
Casting	Dynamics of Structures	Lifting Machines
Finite Element Method	Energy Conversion Machines	Elements of Machines (I, II, III)

General modules:

Mathematics (I, II, III)	Computational and Analytical Methods	Automation and Control
Physics (I,II)	Electrical Engines and Electric Technology	Chemistry
Electronic Technology		

Dissertation:

Inventory systems with 2 cost levels of order: A statistical approach

Degree:

7.5/10 (among the top 5% of the course – equivalent to a first honours degree).

Teaching

Strength of Materials	TEI of Crete, Greece	Sep 2009- Present
I have been assigned to teach <i>Strength of Materials</i> to first year students of Mechanical Engineering. The syllabus includes, Concepts of Stress and Strain, Tensile and Compressive loading, Bending, Torsion, Buckling, Energy Methods. (7 CATS)		
Statics	TEI of Crete, Greece	Sep 2007- 2011
I've been teaching <i>Statics</i> to first year students of Mechanical Engineering. The syllabus includes, Vector Calculus, Centre of Gravity and Distributed Forces, Trusses, Loading of Beams, and Friction (7 CATS)		
Applied Mathematics	TEI of Crete, Greece	Sep 2009- 2010
I've been assigned to supervise the <i>Applied Mathematics</i> laboratory to first year students of Mechanical Engineering. (5 CATS)		
Machine Elements Design II	TEI of Crete, Greece	Sep 2008- Sep 2009
I taught <i>Machine Elements Design –Power Transferring Rotating Elements</i> to 2 nd year students of Mechanical Engineering. The syllabus included, Gears (bevel, spur), Chains and Belts. (5 CATS)		
Advanced Programming	TEI of Crete, Greece	Sep 2006- Sep 2009
I taught <i>Advanced Programming</i> to 3 rd year engineering students. The course focused on establishing computer programming techniques that can be applied to many engineering programs. The Platform that was used was Dev-C++ (2006), and Code-blocks. (5 CATS)		
Mechanical Drafting	TEI of Crete, Greece	Sep 2006- Sep2007
I taught <i>Mechanical drafting</i> to first year students of Mechanical Engineering.		
Programming and Numerical Methods	University of Crete, Greece	Sep 2005-Sep 2008
I taught TETY213Programming of numerical methods and TETY114-Introduction to Programming (Fortran 90)		
Forecasting Methods	University of Warwick, UK	2003-2004 Sep
I was involved in the teaching of forecasting methods in Logistics and Operations Management Science (LOMS) at MSc level. My responsibilities included supervision of an assessed case study exercise.		

Professional Experience

RnD Engineer	Mechatron	2011–Present
<ul style="list-style-type: none"> - Structural Design <ul style="list-style-type: none"> o Load Determination according to Eurocodes o Structural Analysis - Technical Documentation. - Product certification CE. - Software Development for engineering applications e.g.: <ul style="list-style-type: none"> o Dimensional Measurements o Siting Support software (in Java and HTML+Javascript) 		
Senior Research Fellow	TEI of Crete Greece	2005–2011
Software Development for engineering applications		

- Power Curve Measurement for small wind turbines (following IEC 61400, ISO17025 accredited) – Data acquisition, Data processing and Reporting forms
 - Wind Power Potential – (ISO17025 accredited) Data acquisition, Data processing and Reporting forms
- Software development for research projects
- Programming of an aeroelastic code for the prediction of bending and twisting of a passively controlled wind turbine blade – implemented in Mathematica and also in C++ (2009)
 - Gait Accelerometry (data acquisition and processing through non-linear techniques) 2005-2009)
 - Fault detection through passive acoustic monitoring.(2006-2008)
 - Data acquisition (pressure, temperature, speed) and control of a wind tunnel for the testing of wind blades (2005-2008)

Research on numerical analysis and methods.

Non linear time series Analysis

Responsible for maintenance of Website

Employed by 3 research projects

- Akmon 64
- Archimedes II, action 2.2.13
- PENED

Research Fellow	University of Warwick, UK	2002–Sep 2004
------------------------	----------------------------------	----------------------

Employed initially by the CRACTAC technology transfer programme to apply the knowledge gained by the CRACTAC research project to a OEM automotive manufacturer, to a feasibility study of an automotive chassis manufactured entirely by composite materials. The work involved:

Characterisation, testing and material model development of candidate materials for an automotive project.

Contribution to the design engineers regarding FEA of failure and post failure of composite materials, recommending modelling approaches.

I continue working with the Materials Group and my main contributions are in the area of computational modelling of composite materials and structures (monolithic and sandwich) and the in-situ monitoring of composite structures with acoustic emissions. I also provide numerical methods and programming expertise to the group, either by developing software or by teaching the use of software tools.

Also my responsibilities as a research fellow include mentoring of MSc and undergraduate students on their final year projects, and teaching at postgraduate level (MSc).

Research Assistant	University of Warwick, UK	1998-2001
---------------------------	----------------------------------	------------------

Employed by the CRACTAC Research Project for the analysis and design of crashworthy automotive composite structures. The consortium comprised of DTI and EPSRC, and 12 industrial partners (including 2 major OEM manufacturers) and two academic institutions.

- Manufacture and testing of sandwich materials and their constituents.
- Development of characterisation methodology of composite materials based on a continuum damage mechanics.
- Development of analytical simulation tools for crashworthy automotive composite structures.
- Designed, manufactured and simulated analytically of sandwich bumper system (energy absorbing application), within strict deadlines set by industrial partners.
- Presentations bi-monthly to collaborators, covering design and analysis subjects to a mixed audience of academics and industrial managers.

Network advisor	University of Warwick, UK	2000-2001
------------------------	----------------------------------	------------------

Employed part time by the University of Warwick to provide connectivity solutions of student computers to the University LAN. In the process I have gained invaluable experience with a wide variety of computer architectures, hardware and network protocols and also in communicating about problems over the phone with people of different backgrounds and nationalities.

Journal Papers

N C Papadakis, D G Christakis, P G Katonis, G N Tzagarakis, G I Chlouverakis, N A Kampanis and K N Stergiopoulos. "Gait Variability Measurements in Lumbar Spinal Stenosis Patients (Part A: Comparison with healthy subjects)", Accepted August 2009, Physiological Measurement, IOP

N C Papadakis, D G Christakis, P G Katonis, G N Tzagarakis, G I Chlouverakis, N A Kampanis and K N Stergiopoulos. "Gait Variability Measurements in Lumbar Spinal Stenosis Patients (Part B: Preoperative vs Postoperative Gait Variability)", Accepted August 2009, Physiological Measurement, IOP

Stylianou D. Tsigoulis, **Nikolaos C. Papadakis**; Konstantinos Condaxakis, Nikolaos Kampanis, Dimitrios Christakis, Pavlos Katonis "Evaluation of gait pattern in healthy soccer athletes with the use of accelerometry, Medicine and Science in Sports and Exercise, submitted August 2008

Dimitris Al. Katsaprakakis, **Nikos Papadakis**, George Kozirakis, Yiannis Minadakis, Dimitris Christakis, Konstantinos Kondaxakis "Electricity supply on the island of Dia based on Renewable Energy Sources (R.E.S.)", Journal of Applied Energy, Accepted 25 July 2008

C.G. Condaxakis, D.G. Christakis, **N. Papadakis** "Passive controlled wind turbine blades", ", re-submitted Feb 2008

D. Katsaprakakis, D.G. Christakis, A. Zerbos, **N. Papadakis** "On the wind power rejection in the islands of Crete and Rhodes", Journal of Wind Energy, **accepted in February 2007**

N.Papadakis, N.Reynolds, M.Pharaoah, P.K.C.Wood, G.F.Smith, "Strain rate effects on the shear properties of a highly orientated thermoplastic composite material using a contacting displacement measurement methodology– Part A: Elasticity and strength", Composite Science and Technology, vol 64/5, pp. 729-738, 2004

N.Papadakis, N.Reynolds, M.Pharaoah, P.K.C.Wood, G.F.Smith, "Strain rate effects on the shear properties of a highly orientated thermoplastic composite material using a contacting displacement measurement methodology– Part B: Damage evolution", Composite Science and Technology, vol 64/5, pp. 739-748, 2004

C.Ramirez-Himenez, **N.Papadakis**, N.Reynolds, M.Pharaoah, P.K.C.Wood, G.F.Smith, "Identification of failure modes in glass/polypropylene composites by means of the primary frequency content of the acoustic emission event", Composite Science and Technology, vol 64/12, pp. 1819-1827, 2004

Conference Papers

N. Papadakis, G. Tzagkarakis, D. Christakis, N. Kampanis, K. Savakis, P. Katonis, K. Stergiopoulos, Velocity effect on the Gait evaluation differential entropy measure, MobiHealthInf Workshop, BIOSTEC 2009, Porto, Portugal, 14-17 January 2009, full paper accepted.

N.Papadakis, D.G. Christakis, C. Condaxakis, C.R. Ramirez-Jimenez, "Characterisation of damage and failure through an acoustic emissions technique based on the Entropy concept", 2nd International Conference "From Scientific Computing to Computational Engineering", Athens, 5th- 8th July 2006

D. G. Christakis, Constantin Condaxakis, **Nikos Papadakis**, George Kozyrakis, "The influence of terrain slope on the Wind turbine's performance", Proceedings of the European Wind Energy Conference EWEC2006, p197 Athens, 27 February – 2 March 2006.

D. G. Christakis, N. Manioudakis, G. Papadakis, E.J. Tzanaki, **N.Papadakis**, "The Finite Element Models in Solar Architecture", International Conference on the Integration of Renewable Energy Sources into the building structures, Patra July 2005

D. G. Christakis, E.J. Tzanakis, M. G. Kopidakis, **N. Papadakis**, "A Solar Building for the TEI of Crete Mech. Eng. Dept", International Conference on the Integration of Renewable Energy Sources into the building structures, Patra July 2005

C.R. Ramirez-Jimenez, **N.Papadakis**, N.Reynolds, M.Pharaoah, "Differentiation of Failure mechanisms using Acoustic emission technologies.", Non Destructive Testing, Austin, USA, May 2004

- N.Papadakis**, C.R. Ramirej-Jimenez, N.Reynolds, M.Pharaoh, "Relation comparison methodologies of the primary and secondary frequency components of acoustic events obtained from thermoplastic composite laminates under tensile stress", ECCM-11, Rhodes, Greece, May 2004
- N.Papadakis**, C.R. Ramirej-Jimenez, N.Reynolds, M.Pharaoh, "A methodology for the identification of tensile failure mode types in thermoplastic composite laminates by means of acoustic emission monitoring", ECCM-11, Rhodes, Greece, May 2004
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, "Strain rate effects on the shear properties of a thermoplastic composite laminate system using a contacting extensometry method.", ICCE-10, New Orleans, Louisiana, July 2003
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, "Strain rate effects on the shear mechanical properties of a highly orientated thermoplastic composite material using a non contacting extensometry method – Part A: Elasticity and Strength.", MCM 2002, Riga, Latvia, June 2002
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, "Strain rate effects on the shear mechanical properties of a highly orientated thermoplastic composite material using a non contacting extensometry method – Part B: Damage evolution.", MCM 2002, Riga, Latvia, June 2002
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, "Strain rate effects characterisation on the tensile properties of thermoplastic composite laminates using a non contacting extensometry method", ECCM-10, Brugge, Belgium, June 2002
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, G.F.Smith "All thermoplastic composite sandwich parts for the automotive industry - Part B: Finite Element Analysis", Proceedings of Automotive Composite and Plastics 2001, Gaydon, UK, September 2001
- N. Reynolds, M. Pharaoh, D. Fleming, **N.Papadakis**, and G. Smith. 'The evaluation of progressive impact damage in reinforced thermoplastic composite laminate materials', Proceedings of Automotive Composite and Plastics 2000, 2000.
- N.Papadakis**, N.Reynolds, M.Pharaoh, P.K.C.Wood, G.F.Smith "Experimental issues regarding the characterisation of shear properties and sheara damage evolution within a unidirectional composite material.", MRC 2000, London, UK, May 2000

Book Chapters

Management, recycling and reuse of waste composites Edited by Dr Vanessa Goodship Chapter 16 "Designing composite wind turbine blades for disposal, recycling or reuse" N. Papadakis, Technological Educational Institution (TEI) of Crete, Greece, C.Ramirez, Centro de Ingeniería Avanzada en Turbomáquinas S.de R.L. de C.V, Mexico and N.Reynolds, University of Warwick, UK

Other

- G.Tzangarakis, **N. Papadakis**, D. Christakis, N. Kampanis, P. Katonis, Differential Entropy as a Measure for the Gait Acceleration Analysis - A Spinal Stenosis Detection Parameter, Neurosurgical Symposium, Heraklion 3-4 October 2008.
- G. Tzangarakis, **N. Papadakis**, D. Christakis, N. Kampanis, G. Chlouverakis, H. Papoutsopoulou, P. Katonis, Differential Entropy as a Measure for the Gait Acceleration Analysis – A Postoperative Estimation Parameter, 6th Annual Congress Orthopedic Research, Piraeus, 28-30 November 2008.
- G. Tzangarakis, M. Papadakis, S. Tsivgoulis, **N. Papadakis**, D. Christakis, N. Kampanis, P. Katonis, Introduction of new non invasive methods for diagnose spine diseases. Applications in orthopedics, sport medicine and traumatology, 6th Annual Congress Orthopedic Research, Piraeus, 28-30 November 2008.

Technical Reports

Technology Transfer

2002-2003

MG Rover Group Twintex Beam - FE Report

Theoretical prediction of the sustained strain rate on the Full demonstrator beam.

CRACTAC Yearly Reports **1998-2001**

Compiled the yearly technical and executive summaries for the analysis and design work carried out in the University of Warwick. The reports were a deliverable for the industrial partners (including two major OEM manufacturers, and their suppliers).

CRACTAC Reports **1998-2001**

- Theoretical prediction of the sustained strain rate on the Full demonstrator beam.(Sep 2001)
- Land Rover Demonstrator bumper beam report - FE analysis. (Sep 2001)
- Theoretical optimisation of Video extensometer Field Of View (April 2001)
- FE Modelling of a sandwich beam under flexural load in PAM-CRASH (October 2000)
- FE modelling of stiffness and failure initiation of thermoplastic composite laminates subjected to tension using PAM-CRASH (October 2000)
- Finite element modelling of thermoplastic composite laminates under flexural loading in PAM-CRASH (Sep 2000)
- Prediction of the bumper beam size suitable for transverse impact: Quadratic relation between force and time (March 2000)
- Prediction of the bumper beam size suitable for transverse impact: Linear relation between force and time (January 2000)
- Modelling methods for thermoplastic composite laminates in PAMCRASH
- An Overview of Failure Mechanics Criteria for Composites
- A Preliminary Investigation Into The Calibration Procedure Of Foam Material Using Material Model Type 21.
- Flexural response of Material type 21: Flexural Response and effect of modulus of elasticity on the calibration of Material type 21
- Foam Modelling Using Material Type 21: A Numerical Sensitivity Study of the Compression Response of Soft Foam Material using the Explicit Finite Element Method

Other **2001-Present**

- Strain rate effects on the transverse damage evolution properties of a highly oriented Thermoplastic composite material for FEM.[±67.5]2s.(August 2002)
- Strain rate effects on the transverse mechanical properties of a highly oriented Thermoplastic composite material for FEM [+45]8. (August 2002)
- Strain rate effects on the shear mechanical properties of a highly oriented Thermoplastic composite material for FEM [±45]2s.(August 2002)
- Strain rate effects characterisation of thermoplastic uni-directional composite laminates for FEM [0]4. (May 2002)
- Strain rate effects characterisation of thermoplastic randomly oriented glass fibre reinforced composite material for FEM. (January 2002)
- Analytical prediction for the temperature rise during an adiabatic ballistic impact of Plytron specimens. (September 2001)

Conference Organisation

Lean Weight Vehicle **University of Warwick, UK** **October 2003**

Member of the Organisation committee.

Polymer Recycling Network **University of Warwick, UK** **October 2002**

Prepared and printed the conference handouts for 100 delegates.

ACP 2001 **Gaydon, UK** **September 2001**

Responsible for presentation hardware.

Life Time Education Certificates

Stat2.3x Introduction to Statistics: Inference	BerkleyX/edx	Mar 2013-July 2013
---	---------------------	---------------------------

An introduction to statistical ideas and methods commonly used to make valid conclusions based on data from random samples. . The focus of Stat2.3x is on statistical inference: how to make valid conclusions based on data from random samples.

Stat 2.3x discusses good ways to select the subset (yes, at random); how to estimate the numerical quantity of interest, based on what you see in your sample; and ways to test hypotheses about numerical or probabilistic aspects of the problem. The methods that were covered are among the most commonly used of all statistical techniques.

Course Mark: 89%

2.01x Elements of Structures	MITx/edx	Mar 2013-July 2013
-------------------------------------	-----------------	---------------------------

2.01x introduces principles of structural analysis in applications to essential load-bearing elements, such as bars in axial loading, axisymmetric shafts in torsion, and symmetric beams in bending.

Course Mark: 100%

Electronics and circuits	MITx/edx	Mar 2013-July 2013
---------------------------------	-----------------	---------------------------

6.002x is a fundamental undergraduate electrical engineering course that introduces engineering in the context of the lumped circuit abstraction. Topics covered include: resistive elements and networks; independent and dependent sources; switches and MOS transistors; digital abstraction; amplifiers; energy storage elements; dynamics of first- and second-order networks; design in the time and frequency domains; and analog and digital circuits and applications.

Design and lab exercises were also significant components of the course.

Course Mark: 99%

Analysis of Composite Structures	Imperial College, London, UK	June 1999
---	-------------------------------------	------------------

The module consisted of taught and laboratory computer classes. The taught material covered all approaches to composite material analysis, from Classical Laminate Theory to Fracture mechanics and also computational methods like Finite Elements analysis. Implicit element codes, their element formulations and material models were covered extensively. Comprehension was outclassed by laboratory exercises.

Stochastic analysis of engineering systems	Frankfurt, Germany	September 1999
---	---------------------------	-----------------------

This taught module aimed to introduce the concepts of stochastic analysis to engineers. Different concepts of stochastic models were introduced with particular interest in the identification of models.

Multivariate analysis for engineers	Frankfurt, Germany	September 1999
--	---------------------------	-----------------------

The concepts of multivariate analysis to engineers were explored. Attention was given to MANOVA with a number of examples.

Lead Auditor for ISO9000	University of Warwick, UK	September 1998
---------------------------------	----------------------------------	-----------------------

One-week accredited course on the ISO9000 standard. Taught the theory and then the ISO9000 standard implementation on a fictional company as an assessed exercise.

MATLAB course.	University of Central England, UK	June 1998
-----------------------	--	------------------

An intermediate course to Matlab for engineers. The material covered functions, m-scripts and advanced matrix manipulation concepts.

Postgraduate Training

Observing Teaching	University of Warwick	October 2004 Sep
---------------------------	------------------------------	-------------------------

The workshop was concerned with various techniques and methods for teaching observation and providing feedback.

Ubiquitous computing	University of Warwick	October 2003
-----------------------------	------------------------------	---------------------

A workshop on the opportunities and issues raised by the wide acceptance of computing. Case studies on documented cases were discussed. The discussions covered the main drivers and also the social and economic effects on both the university and the student population.

Workshop on CDM **Paris, France,** **Sep. 2000**

An international workshop on “Recent advances in continuum damage mechanics” which was part of a series of lectures on continuum damage mechanics and the application on composite materials. Had the opportunity to discuss with the leaders in the field and follow presentations.

Foreign Languages

Greek (native)

English (fluently)

German (European certificate B1 level – Good knowledge)

Japanese (Foundation course at University of Warwick)

Spanish (Foundation course at University of Warwick)

Italian (Intermediate Level)

Research Interests

Computational modelling, numerical and quantitative methods

Composite material model based on Continuum Damage Mechanics

Statistic inference of univariate and multivariate dataset

Visualisation and interpretation of multivariate datasets

Finite Element analysis

Structural Mechanics and Strength of Materials

Non Destructive Testing (NDT) methods (i.e. Acoustic Emissions, Thermal Imaging)

Digital Signal Processing (DSP)

IT Skills

Operating Systems:

- Microsoft Windows (extensive experience with win95 – win7)
- Unix: extensive experience with Linux (apt based distributions like Debian, Ubuntu, Mint), good experience IRIX, worked with Solaris, and FreeBSD.
- Experience with MacOS9 and MacOSX (up to 10.4 Tiger)

Packages:

- Excellent working experience with MS-Office (written VBA applications and Add-ins), and other similar packages (LibreOffice, WordPerfect, KOffice).
- Mathematical Packages: Extensive work with symbolic algebra systems (e.g. Mathematica and Maxima), and numerical packages (Matlab, Octave, Freemat), and experience in Python (numPy and Scipy).
- Mindmapping software: Freemind, Freeplane, Mindmanager.

Programming:

- **Extensive experience:** C#, Java, Labview, VB.Net
- **Experience:** C, Python, PHP, HTML4 and HTML5, Javascript, SQL
- **Programming Platforms:** Windows, Web, Linux, Android

- **Source Code Management:** Subversion, Mercurial, Git
- **Software and Systems Design:** UML, SysUML

Commercial CAD Packages:

2D Drafting:

- Autodesk Autocad, Mechanical Desktop,

3d

- Inventor Autodesk
- Solidworks

Commercial FEA Packages:

- Pam-Crash (explicit non-linear FE Solver, pre and post processor),
- LS-Dyna (explicit non-linear FE Solver, post processor),
- HyperWorks (Pre and Post-Processor and linear solver),
- GiD (FEA Pre and Post Processor),
- ProDesktop (Parametric Modeller), CADD5 (workshop during MSc).
- Robot Structural Analysis Software (RSAP)

Other

European Union Driving Licence

Other Extracurricular Activities

Dancing	2006-2009
----------------	------------------

Dancing international and folkloric dances. Participated in many events.

Aikido	1997-2007
---------------	------------------

Aikido training at least three times a week since 1997. Aikido is a purely defensive, non competing Japanese martial art.

Programming Experience

June 2013	CPV Solar Tracker Control
Major redesign and rewrite of the CPV Solar Tracker Control PLC software (see August 2012). The software was redesigned, and many parts were refactored based on the experience of the previous year testing. Significant changes occurred to optimise the hydraulic system and enhance the typical accuracy of the solar tracker from 0.2[deg], to 0.07[deg].	
The algorithm involved a self-learning module that minimised both power usage, and wear and tear.	
March 2013	CPV Panel Assembly Tolerance
Developed a suite of tools and functions in R language for visualising the deviation of panels.	
September 2012-May 2013	Truss solver
Software development in Java, for a software used to solve trusses (http://code.google.com/p/truss-solver/). The software was part of a final year project at the department of mechanical engineering. My main function was designing the classes and reviewing the code commits from the team. The program had the following specifications:	
<ul style="list-style-type: none"> - Solve 2D trusses with node displacement method - GUI for easy input and output, and verification and validation of input. - Ability to create/modify/delete elements of the problem - Visual representation of truss, forces and constraints - XML Save and load facilities - Loads may be in different angles. 	
October 2012 – April 2013	CPV Solar Tracker Assessment
Developed over a period of time a suite of tools and functions in R language for processing the ASCII data from the CPV Solar tracker monitoring campaign. Output of the software included:	
<ul style="list-style-type: none"> - Real time pressure graphs - Pointing-Error 2-d kernel density estimation plots - Rgl 3d plots of power and efficiency vs pointing error - Tracking accuracy calculation (typical and 95% confidence) 	
Sep 2012-Nov2012	Solar Tracker Monitoring
Development for a windows software in C#.NET. The software was developed as part of a CPV solar tracking assessment program. The software:	
<ul style="list-style-type: none"> - communicated with the PLC(Beckhoff industrial PC) that controlled the 170[m²] solar tracker and - monitored real time the variables with a user defined frequency (up to 5[Hz]) - recorded the data - prepared and presented relevant pressure, tracker position and angular velocity graphs. 	
August 2012-October 2012	CPV Solar Tracker Control
Co-development and maintenance for a PLC software according to IEC-61131 ST language. The program was developed as part of a CPV solar tracking assessment program. The software allowed manual tracker control and automatic tracking with an closed (sun tracking sensor) and open (sun tracking algorithm) feedback control system.	
The PLC implemented additional sensors for monitoring tracker position with 0.013[deg] resolution and also pressure transducers for monitoring the hydraulic system.	
Developed many visualisations to help users digest the data from the control system.	
March 2012	Geometrical transformations
Developed a software in Python and R that processed the node displacement output from a Solidworks structural analysis of a solar tracker under wind load, and through appropriate calculations obtained the angular deviation for each panel on a solar tracker of 140[m ²].	
February 2012	Frictional Brake calculation

Developed an Android app (Android 2.0 and over) that estimated the behaviour of different band brake and drum brake configurations.

February 2012 **Hydraulic power**

Developed an Android app that estimated the force from a hydraulic piston, depending on diameter, and maximum pressure.

December 2011 **Measurement technology**

Mathematical development and implementation of Best-fit with least squares circle algorithm in Labview to measure the maximum and minimum diameters of a concrete foundation.

Mathematical development and implementation of best fit plane algorithm for measuring maximum flatness on a concrete foundation. Programming in Labview (for deployment) and in Python (for verification and development).

October 2011 **Topographical Calculations**

Mathematical development and implementation of coefficient of orography according to Eurocode 1 (EN1991-1-4:2010). The software is used to establish the location that a solar tracker structure maybe installed. Developed in Java, Android (compatible to Donut and upwards) and finally in HTML + Javascript. The HTML+ Javascript utilised Google Maps information and allowed a complex process that was previously required three different applications (Google Maps, the Java application and Google Earth) to be done in one URL.

August - September 2011 **Wind Load Calculation**

Mathematical development and implementation of wind load calculation according to Eurocode 1 (EN1991-1-4:2010). Developed software in wxMaxima (development) and Java (deployment) that estimates the load. Also separate implementation in Android.

June July 2011 **Structural Design**

Implemented an 1D FE code in Java, with an Object Oriented design.

April 2011 **Lifts**

Software for calculation of Electrical Lifts. The software uses an SQLite database on a .NET program to retrieve the existing components and also performs and outputs all calculations in HTML.

March 2011 **Wind Energy**

Implementation of algorithm for the prediction of aerodynamic performance of Wind turbine blade from Hansen book. Addition to the December 2010 software.

December 2010 **Wind Energy**

Development of object oriented code for 1d aerodynamic prediction of Wind turbine blade performance. Porting from F77 and adding visualisation tools. The program uses the optimization concepts from D. Le Gourières "Les Eoliennes".

July 2010 **Wind Energy**

Re-development of ISO 17025 accredited programs for

- Data acquisition of enviromental data (temperature, humidity, pressure, wind speed velocity), electrical power data (Voltage, Current)
- Processing of the above data in order to obtain the power curve of a small wind turbine, according to IEC 61400-12 specifications.

The software obtains data from:

- 7 voltage transducers (3 for generator input, 1 for ouput to batteries, 3 for output to grid)
- 7 current transducers(3 for generator input, 1 for ouput to batteries, 3 for output to grid)
- 8 anemometers
- 4 wind vane
- 1 barometer, 1 thermometer, 1 hygrometer.

Implementation in Labview.

March 2010 **Wind Energy**

Development of code for accessment of anemometer calibration. The program compares anemometer measurement data from different periods of a measurement campaign in and compares the statistical

criterion as described in Annex K of IEC61400-2. The program is part of the accreditation of the Wind Energy Laboratory.

November 2009 **Heat Transfer**

Development of object oriented code for prediction of temperature in a constant diameter, insulated pipe with respect to the length.

May 2009 **Biomechanics**

Development of code for separating gait cycles using digital filters and derivatives of the acceleration signal of the gait.

November 2008 **Machine Elements**

Development of *semi*-automatic code for the calculation of Gear sets (implementaions in C#, JS). Development of *fully*-automatic code for the calculation of Chain sets (implementaions in JS and PHP). Development of *semi*-automatic code for the calculation of Belt drives (implementaions in, JS).

October 2008 **Aeroelastic Code**

Development of mathematical model and Code for the calculation of the deflection and torsion of a wind turbine blade based on the wind velocity and the geometric proeperties (Extension of the code that was developed on March 2008). The algorithm was implemented first in Mathematica, and then on C++.

May 2008 **Wind park Feasibility Study report**

Development of a C++ class suitable for Feasibility study of a wind park project. The program was text based and the result output was sent to ASCII files in the form of folders

March 2008 **Calculation of the torsional and bending moment of a wind turbine blade**

Programming in Mathematica of the wind turbine blade torsional and bending moment calculation. The program uses as data the neutral axis of the wind turbine blade. For each section the program calculates the aerodynamic loading point and then calculates the bending and torsional moments.

February 2008 **Validation of anemometer calibration preservation**

Development of a program that validates whether the anemometer calibration is preserved during a wind measurement campaign, according to IEC standards). The program is part of the Wind Energy laboratory 17025 accredited programs. Implemented in Labview.

February 2008 **Validation of anemometer calibration preservation**

Development of a data acquisition program for the dynamic testing of Wind Turbine blades. The program collects data in real time and then queues them (using different threads) for processing when a CPU is available. Implemented in Labview

January 2007 **DAQ and processing for the power Curve of a Small wind Turbine**

Development of ISO 17025 accredited programs for

- Data acquisition of enviromental data (temperature, humidity, pressure, wind speed velocity), electrical power data (Voltage, Current)
- Processing of the above data in order to obtain the power curve of a small wind turbine, according to IEC 61400-12 specifications.

The software obtains data from:

- 4 voltage transducers
- 4 current transducers
- 2 anemometers
- 1 wind vane
- 1 barometer, 1 thermometer, 1 hygrometer.

Implementation in Labview.

The post-processing software averages the 1-sec data to 1-min, and rejects the measurements that are not compliant to the rejection criteria. Then it estimates the Power curve and the uncertainty based on the IEC 61400-12.

October 2006 **Uncertainty Calculation**

Programming of the uncertainty calculation algorithm in Labview for:

- Power curve measurement for small wind turbines,
- Wind potential measurement

Programs are part of the ISO 17025 accreditation of the Wind energy laboratory.

September 2007	Processing of Wind Measurement Data
Development of a wind measurement program for processing and validation of wind potential measurement in Labview.	
November 2006	Gait Analysis Software
Development of user friendly software to process gait acceleration measurements. The program calculated: Entropy maps, Entropy evolution, Phase diagrams on all three acceleration axis. Implemented in Labview.	
May 2006	Gait Analysis Software
Development of user friendly software to obtain gait acceleration measurements. Implemented in Labview	
August 2005	Gait Analysis Software
Development of algorithm module to obtain the spectrum and amplitude differential entropy for gait acceleration measurements. Implemented in Labview	
November 2003	Wavelet implementation to Fingerprinting of AE
Developed R-scripts that use the Pseudo Wigner-Ville and Morlet (or Mexican hat) wavelets to provide a time-frequency distribution.	
September 2003	Visualisation of Bivariate kernel density estimation
The R-script computed the bi-variate kernel density estimation of large data sets, for sorting/classification of acoustic emission events.	
August 2003	Processing of Mass Spectroscopy data
The software converted an irregular Retention time vector to a equi-spaced vector Relative Retention Time vector based on developed rule sets, and subsequent comparison of different dataset.	
January-July 2003	Fingerprinting of acoustic emission events
The R-script automatically conducted intensive FFT computations on acoustic events waveforms, and then visualise the relevant information using a) the time dependent evolution of a kernel density estimation, b) A plot of vectors of the primary and secondary frequency.	
October 2002	Transient analysis of acoustic waveforms
Developed software for the efficient processing of acoustic event waveforms, for use in non destructive testing of composites (developed in R). The software is used for the monitoring of the damage progress of composite materials. Data sets typically involved thousands of data sets each with 1000 or 2000 points making management and processing of data a non-trivial matter.	
April 2002	Correlation coefficients of non equi-spaced vectors
Developed Excel add-in for the processing and calculation of correlation coefficients from a set of non equi-spaced curves (used in comparison of Finite Element vs. Experimental results) (VBA).	
November 2001	Statistical analysis of experimental data sets
Interactive software for data handling and computation of regression analysis, equality of means, equality of variance and chi-squared test (test for normality of the data set). The R script computed and then selected the optimum model (between a linear and quadratic model of a given property).	
July 2001	Heat transfer of injection moulded process
Developed a Matlab script for heat transfer application that allowed prediction of the wall temperature of a gas-assisted injection moulding.	
May 2001	Impact testing processing
Excel add-in software for the semi-automatic handling, filtering and presentation of the data sets from a impact testing machine. (VBA Excel).	
September 2000	Characterisation of damage properties of composites

Developed software for the interactive filtering, handling and processing of raw test data for the computation of mechanical and damage evolution properties (Developed separately as an VBA for Excel as an add-in and subsequently entirely in Matlab in form of scripts).

February 2000

Automated processing of experimental raw data

Excel add-in for the automatic handling and presentation of the data sets from a universal testing machine.

October 1999

Sandwich beam flexural modelling

VBA Excel add-in for the interactive computation of static flexural mechanical problems for sandwich composite materials using equations from beam and plate theory. The program accepted geometric and loading parameters for simple beams for monolithic and sandwich materials and produced the neutral axis graph.

June 1997

Stochastic simulation of inventory systems

Programmed in FORTRAN a stochastic simulation model of an inventory system with two cost order levels. The program simulated the demand based on the average and standard deviation, and computed the optimum level of primary and secondary order.