DAN COJOCARU

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EDUCATION

Ph.D., Mechanical Engineering, University of Delaware, USA, 2008
GPA 4.00/4.00
Advisor: Professor Anette M. Karlsson, Ph.D.

Dissertation: "On numerical modeling of cyclically loaded structures"

Relevant doctoral-level coursework: Engineering Mathematics (2 courses), Continuum Mechanics (2 courses), Finite element methods (3 courses), Solid Mechanics, Mechanical Behavior of Materials, Fluid Mechanics, Heat Transfer, Dynamics, Probability Based Design, Non-linear constitutive equations, Computational Fracture Mechanics, Nano-mechanics and Multiscale Methods

M.S., Mechanical Engineering, University Politehnica of Bucharest, Romania, 2001,
GPA 10.00/10.00

Relevant master-level coursework: Composite Structures, Fracture Mechanics, Reliability and Fatigue of Materials, Numerical Methods for Stress and Strain Analysis, Experimental Stress Analysis, Measurement and Analysis of Vibrations

Diploma Engineer, **B.S.,** Mechanical Engineering, University Politehnica of Bucharest, Romania, 2000,
Summa cum laude, **GPA 9.95/10.00**

ACADEMIC AWARDS

University Dissertation Fellowship (Sept. 2007 – May 2008), University of Delaware

Graduate Travel Fund Award, October 2007, University of Delaware

College of Engineering Graduate Fellowship (Sept. 2003 – Aug. 2004), University of Delaware

Head of Graduated Series Award, University Politehnica of Bucharest, awarded for graduating with the highest GPA over the 5 year academic program, 2000

Scholarship for Outstanding Achievements, University Politehnica of Bucharest, the most prestigious award for students in Romanian academia, awarded three times, 1997-2000

Merit Scholarship, University Politehnica of Bucharest, awarded four times, 1995-1997

PUBLICATIONS

D. Cojocaru, A.M. Karlsson, "An object-oriented approach for modeling and simulation of interfacial crack growth of cyclically loaded structures", Advances in Engineering Software, (accepted, 2007)

D. Cojocaru, A.M. Karlsson, "A simple numerical method of cycle jumps for cyclically loaded structures", International Journal of Fatigue, 28 (12) 1677-1689 (2006)

D. Cojocaru, S.D. Pastrama, P.M.S.T. de Castro, "Finite element weight function application for a cracked disk", International Journal of Fracture 116: L9-14, 2002.

D. Cojocaru, S.D. Pastrama, "Study of Radial Cracks in Hollow Disks Using Weight Function Method" , Bulletin of Romanian Association of Fracture Mechanics , No. 12 – May 2002 (in Romanian)

MANUSCRIPTS IN PREPARATION

D. Cojocaru, A.M. Karlsson, "On using plastic dissipation as a crack propagation criterion in cyclically loaded structures"

D. Cojocaru, A.M. Karlsson, "Simulations of interfacial fracturing under brittle-ductile type transitions in cyclically loaded bi-layer systems "

Presentations

D. Cojocaru, A.M. Karlsson, "Modeling and Simulation of Interfacial Crack Growth of Cyclically Loaded Layered Structures", ASME International Mechanical Engineering Congress, November 2007, Seattle

D. Cojocaru, A.M. Karlsson – "On the Failure Evolution of a Multilayered System Subjected to Thermal Cycling", ASME International Mechanical Engineering Congress, November 2006, Chicago

Research Interests

Numerical modeling and simulation of failure mechanisms in advanced solid structures, Computational fracture mechanics, Computational methods in materials science, Computational mechanics and Numerical methods

Teaching Interests

Continuum Mechanics, Solid Mechanics, Fracture Mechanics, Fatigue of Materials,
Finite Element Methods, Numerical methods, Computer Programming for Scientists

Professional Experience

Research Assistant, Computational Mechanics Lab., Department of Mechanical Engineering, University of Delaware (Sept.2004 - present)

-Investigate failure mechanisms of advanced multi-material structures with an emphasis on thermo-mechanical fatigue of thermal barrier coatings.
-Develop finite element models using ABAQUS.
-Design and program computational schemes and numerical tools for ABAQUS using Python, ABAQUS Scripting Interface and FORTRAN.
-Code FORTRAN subroutines for ABAQUS, including constitutive response in UMAT user subroutine.
-Write programs for FEM related pre-/post-processing tasks, including parametric FE model generation.
-Code pre-processing programs to generate the FE models of randomly distributed micro-structure of materials and post-processing programs to compute the effective material properties based on the stress/strain response of the micro-structure.
-Code translator for importing result files from in-house research FE codes into ABAQUS/CAE for visualization.
-Program finite element software (including the support mathematical library for tensor/matrix calculus) in Visual C++.
-Provide ABAQUS and finite element modeling support to the undergraduate research assistants in Computational Mechanics Lab.
-Administrate and maintain the computers in the Computational Mechanics Lab.

Engineer, CYBERNETICS LTD, Bucharest, Romania (Sept. 2000 - Aug. 2003)

-Designed and developed software solutions (based on MS SQL Server, Visual C++, MFC, ODBC, DAO, ADO technologies).
-Prepared training courses and provided training and technical support for CATIA V5 and CADDS 5i software for CAD modeling and NC machining (i.e. CAM) applications.
-Developed and maintained the company web-site.

Special Achievements

-Coordinated project, designed and programmed multi-level server-client software for The Romanian Chamber of Financial Auditors - a 6 month project. (MS SQL Server database and Visual C++/MFC Client)
-Wrote a 67 page financing proposal for the PHARE program entitled "Accomplishment and Promoting of a Computer Aided Design and Manufacturing Integrated System"
-Designed and developed a software for GRE test-takers (MS Access database/ Visual C++, MFC Client).

Professional Affiliations

American Society of Mechanical Engineers (ASME)
United States Association for Computational Mechanics (USACM)

Awarded Student Research Papers

D. Cojocaru - “Study of Radial Cracks in Hollow Disks Using Weight Functions Method” – awarded the first place at Scientific Communication Session for Students in Strength of Materials, 2001, University Politehnica of Bucharest

D. Cojocaru, R. Gradin - “A Visual C++ Software for Calculation and Optimization of Cutting Process Parameters” – awarded the first place at the Scientific Communication Session for Students in Machine Building Technology, 2000, University Politehnica of Bucharest

G. Salvarovschi, R. Gradin, D. Cojocaru, B. Guinea - “Solutions in Prosthesis Design for Arm Replacement” - awarded the first place at the Scientific Communication Session for Students in Biotechnology, 1999, University Politehnica of Bucharest

R. Gradin, D. Cojocaru - "A 3D CAD Model of a Mechanical Hand" – awarded the first place at the Scientific Communication Session for Students in Descriptive Geometry and Engineering Design, 1999, University Politehnica of Bucharest

D. Cojocaru, R. Gradin - "Computer Simulation for Mechanisms Kinematics Using AutoCAD and AutoLISP Programming " - awarded the second place at the Scientific Communication Session for Students in Descriptive Geometry and Engineering Design, 1999, University Politehnica of Bucharest

D. Cojocaru, R. Gradin - "Stresses in a Cutter Tooth during Milling Process of Cylindrical Gears" – awarded the third place at the Scientific Communication Session for Students in Robots, Machine-tools and Cutting Tools, 1999, University Politehnica of Bucharest

D. Cojocaru, R. Gradin - "A Design Study for a Five-finger Mechanical Hand" – awarded the first place at the Scientific Communication Session for Students in Theory of Mechanisms and Robots, 1998, University Politehnica of Bucharest

F. Constantinescu, D. Cojocaru, R. Gradin – "Integration of Computer Aided Design in Mechanical Engineering" – awarded the first place at the Scientific Communication Session for Students in Descriptive Geometry and Engineering Design, 1997, University Politehnica of Bucharest

E. Gafencu, D. Cojocaru, R. Gradin - "The Influence of Boron and Titanium Micro-alloying on the Hardening Capacity of Structural Steels" – awarded the second place at the Scientific Communication Session for Students in Physical Metallurgy, 1996, University Politehnica of Bucharest

Computer Skills

Finite element software	ABAQUS (strong experience with ABAQUS Scripting Interface), ADINA, ANSYS, COSMOS
Programming	Visual C++, MFC, Python, FORTRAN, Mathematica, SQL, VTK
CAD/CAM Software	CATIA v5, CADDS 5i, AutoCAD
Web developing	HTML, Java Script, Macromedia Dreamweaver
Databases	MS SQL Server, MS Access
OS	Windows, Linux, Unix
Other	Adobe Illustrator, MS Word, MS Excel, MS PowerPoint

Languages

English (fluent), Romanian (native), French (intermediate)

Academic References

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Personal References

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