YAN AZDOUD, Ph.D.

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French citizenship
Pending Green Card (EB2-NIW)

1807 Saint Paul Street,
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Personal website

Experience

Research:

Postdoctoral researcher, CMRL, civil eng. dept., Johns Hopkins University, Baltimore, MD, USA
2014-Present

Task: Adaptive enrichment of the Crystal Plasticity Finite Element Model (CPFEM)
Principal Investigator: Prof. Somnath Ghosh
Skills: Finite deformation, wavelet decomposition and hierarchical FEM for crystal plasticity

Doctoral student researcher, COHMAS, KAUST, Saudi Arabia
2010-2014

Thesis title: A hybrid local/nonlocal framework for the simulation of damage and fracture
Advisor: Prof. Gilles Lubineau
Skills: Development under C++ and OpenMP, non-local mechanics, damage mechanics, non-local fracture mechanics, coupling methods

Research intern, Sandia National Lab at Albuquerque NM, USA
Summer 2011

Task: Development of composite models on EMU
Advisor: Dr. Stewart Silling
Skills: Development under FORTRAN and MPI, non-local mechanics, damage mechanics, laminated composite theory

Graduate student researcher, LMT Cachan, France
Spring 2010

Thesis title: Two optimization algorithms by multi-time-stepping for explicit dynamic simulations
Advisor: Prof. Christian Rey
Skills: Domain decomposition, multi-time stepping, 2D FEM solution in MATLAB

Research intern, Department of Mechanical Engineering, UC Berkeley, CA, USA
Summer 2009

Task: Simulation of embed SiC sensor in composite structures
Advisor: Prof. Albert P. Pisano, Prof. Debbie Senesky
Skills: Simulation in Abaqus, stress criteria in anisotropic models

Teaching:

Volunteer instructor at the Station North Tool Library, Baltimore, MD, USA
2015-Present

Topics: Acoustics and Metallurgy
About 60 students, 40 hours of instruction

Teaching Assistant, *advanced FEM and multiscale methods*, JHU, Baltimore, MD, USA
2015

Professor: Professor S. Ghosh

Substitute lecturer for *Introduction to Finite Elements*, KAUST, Saudi Arabia

2013

Topics: Solved problems on weak and strong form concepts
Professor: Prof. Gilles Lubineau
Two 1.5 hours class for about 20 students

Private tutoring, Paris, France

2005-2009

Topics: High school and college mathematics, physics and French literature
About 400 hours for 6 students

Education

Ph. D. in Mechanical Engineering, King Abdullah University of Science and Technology (KAUST), Saudi Arabia

June 12th, 2014

M. S. in Mechanical Engineering, Advanced Techniques in Structure Calculus (TACS), ENS de Cachan

Graduated in 2010

B. S. in Mechanical Engineering, ENS de Cachan, France

Graduated in 2008

Classe Preparatoire, Lycée Saint-Louis, Paris, France

2005-2007

Baccalauréat, French high school equivalent, El Jadida, Morocco

Completed in 2005

Skills

Mechanical engineering

Theoretical skills

Computational mechanics, local continuum mechanics, non-local fracture, non-linear solver, Peridynamics, damage mechanics, dynamic simulation, laminate theory, XFEM/GFEM, homogenization methods, coupling methods, wavelet methods, FFT methods, hierarchical FEM, DG/FEM, CAD-CAM

Experimental skills

Preparation of composite laminate (vacuum infusion, molding, curing and post-curing), metal casting and working, long distance microscopy, indentation test, traction and micro-traction test, image correlation, CNC machining and rapid prototyping, wood working, MIG welding.

Languages

Fluent in French and English, conversational in Spanish and Arabic

Programming

Languages: C, C++, FORTRAN, HTML/CSS, Javascript, MATLAB
Libraries: OpenMP, MPI, Cuda, OpenGL shaders

Software

OS: Windows, Mac, Linux
Engineering: Comsol Multiphysics, Abaqus, CATIA, Solidworks, Mathematica, EMU, Tecplot, Paraview
General: Latex, Adobe Illustrator, Photoshop, Premiere

Conferences and publications

Peer reviewed publications:

Y. Azdoud, S. Ghosh*, Adaptive Wavelet-Enhanced Hierarchical Finite Element Model for Polycrystalline Microstructures,* **submitted**

F. Han, G. Lubineau, **Y. Azdoud,** *Adaptive coupling between damage mechanics and peridynamics: a route for objective simulation of material degradation up to complete failure,* Journal of the Mechanics and Physics of Solids, (2016)

F Han, G. Lubineau, **Y. Azdoud,** A. Askari, *A morphing approach to couple state-based peridynamics with classical continuum mechanics*, Computer Methods in Applied Mechanics and Engineering, (2016)

Y. Azdoud, F. Han, G. Lubineau, *The morphing method as a flexible tool for adaptive local/non-local simulation of fracture*, Computational mechanics, Vol 54, 711-722, (2014)

F. Han, **Y. Azdoud,** G. Lubineau*, Computational modeling of elastic properties of carbon nanotube/polymer composites with interphase regions. Part I: Microstructural characterization and geometric modeling*, Computational Materials Science, Vol 81, 641-651, (2014)

F. Han, **Y. Azdoud**, G. Lubineau*, Computational modeling of elastic properties of carbon nanotube/polymer composites with interphase regions. Part II: Mechanical modeling*, Computational Materials Science, Vol 81, 652-661, (2014)

Y.Azdoud, F. Han, G. Lubineau, *A morphing framework to couple non-local and local anisotropic continua,* International Journal of Solids and Structures, Vol 50, **9**, 1332-1341, (2013)

G. Lubineau, **Y. Azdoud**, F. Han, C. Rey and A. Askari, *A morphing strategy to couple local to non-local continuum mechanics*, Journal of the Mechanics and Physics of Solids, Vol 60, **6**, 1088-1102, (2012)

In preparation

Y. Azdoud, J. Cheng, S. Ghosh*, Adaptive Wavelet Enhancement for Finite Deformation Generalized Crystal Plasticity Finite Element Method,* **under preparation**

Book chapters

A. Askari, **Y. Azdoud**, F. Han, G. Lubineau, S. Silling, *Peridynamics for analysis of failure in advanced composite materials*, Chapter 19 (12), **Numerical Modelling of Failure in Advanced Composite Materials**, Woodhead Publishing (2015)

Y. Azdoud, F. Han, D. Littlewood, G. Lubineau and P. Seleson, *Coupling Local and Nonlocal Models,* Chapter 14*,* **Handbook of Peridynamic Modeling***,* Chapman and Hall/CRC, (2016)

Conferences and workshops

S.Ghosh, **Y. Azdoud**, *Advancing Computational Methods for Image-based Modeling of Polycrystalline Metallic Material*, AFOSR 2016 Multiscale Structural Mechanics Annual Grantees Meeting, Dayton, OH (2016)

Y. Azdoud, J. Cheng, S. Ghosh, *The Adaptive Wavelet Enhancement of the Crystal Plasticity Finite Element Method*, Engineering Mechanics Institute Conference 2016, Nashville, TN (2016)

Y.Azdoud, J.Cheng, S. Ghosh, *The Adaptive Wavelet Enhancement for Crystal Plastic Finite Element Method*, 13th US National Congress on Computational Mechanics, San Diego, CA (2015)

S. Ghosh, **Y. Azdoud**, *Advancing Computational Methods for Image-based Modeling of Polycrystalline Metallic Material*, AFOSR 2015 Multiscale Structural Mechanics Annual Grantees Meeting, Fort Walton, FL (2015)

S.Ghosh, **Y. Azdoud**, *Advancing Computational Methods for Image-based Modeling of Polycrystalline Metallic Material*, AFOSR 2014 Multiscale Structural Mechanics Annual Grantees Meeting, Albuquerque, NM (2014)

G. Lubineau, F. Han and **Y. Azdoud**, *How can peridynamics and damage mechanics work together to achieve objective simulation of failure?* MM&FGM 2014, Sao Paulo, Brazil (2014)

Y.Azdoud, F.Han, G. Lubineau, *Adaptive coupling for the simulation of non-local static fracture*, CEMAM workshop, KAUST, Thuwal, KSA (2013)

Y. Azdoud, *Multiscale Simulation of Non-Local Models*, Noor for Research, KAUST, Thuwal, KSA (2013)

Y. Azdoud, F. Han, G. Lubineau, *Static fracture in non-local simulation using adaptive DGFEM*, NDF2013, San Antonio, TX, USA (2013)

Y. Azdoud, G. Lubineau, F. Han, *Ghost Forces in Non-Local-to-Local Continua Coupling by the Morphing Method*, ESMC'12, Graz, Austria (2012)

G. Lubineau, **Y. Azdoud**, F. Han, C. Rey and A. Askari, *A gradient-based coupling method between Cauchy and non-local continuum***,** WCCM'12, Sao Paulo, Brazil (2012)

Y. Azdoud and G. Lubineau**,** *A Gradient-based Coupling Method between Cauchy Continuum Model and Bond-Based Peridynamics*, CFRAC'11, Barcelona, Spain (2011)

G. Lubineau, **Y. Azdoud**, F. Han, C. Rey and A. Askari, *A gradient-based Coupling method between Cauchy and Non-local continuum*, USNCCM'11, Minneapolis, MN, USA (2011)

Awards, recognition and fellowship

EPA Smart City Air Challenge: $40000 granted	2016
Crowdfunding research project: $2611 granted	2016
Member of USACM	2015-present
KAUST Provost academic achievement award: $10000 granted	2010-2011
KAUST Ph.D. student fellowship	2010-2014
ENS *Normalien* fellowship	2007-2010

Additional information

Sport:	Soccer, squash and natation
Volunteering:	Instructor in KAUST for WEP (2013)
	Instructor in the Baltimore Station North Tool Library (2015-present)
Music:	Derbuka (traditional Arabic hand drum)
Hobbies:	Steel forging, gardening, photography, and astro-photography