MAJID TABESH

Texas A&M University, MS 3409, WERC 223J, College Station, Texas, 77843-3409
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Objective

To seek an internship/full time position in Mechanical/Solid Mechanics Engineering

Immigration Status

Permanent resident, national interest waiver (EB-2 NIW)

Education

- 2010-present: PhD., Materials and Structures, Texas A&M University (TAMU), GPR: 4.0/4.0
  Texas Institute for Intelligent Materials and Structures (TiiMS), TAMU, College Station, Texas
  Committee Chairs: Dr. Dimitris Lagoudas, Dr. James Boyd
  Dissertation: Large deformation modeling of anisotropic thermomechanical response in shape memory alloys
- 2008-2010: M.Sc., Mechanical Engineering, University of Toledo, Toledo, Ohio, GPR: 3.93/4.0
  Committee Chair: Dr. Mohammad Elahinia
  Thesis: Finite element modeling of bio-inspired shape memory alloy medical devices

Formal Training Courses

- ABAQUS Training Course: Contact in ABAQUS/Standard and Other Convergence Issues, June 2010
- Shape Memory and Superplastic Technologies, ASM: Nitinol for Medical Devices, July 2008

Fields of Experience / Expertise

- Five years of experience in finite element analysis (FEA) of mechanical systems, stress analysis, and structural analysis. Modeling incorporating various material responses and physics such as thermal-electrical, thermal-mechanical coupling and piezoelectric effect, nonlinear material behavior such as viscoelastic, viscoplastic effects in creep and relaxation, shape memory effect and psuedoelasticity in shape memory alloys (SMA).
- Three years of experience in experimental stress analysis, strain gages, servo-hydraulic load frames, machining, temperature controllers, thermocouples, and feedback control of experiments.
- Six years of experience in design, development, and optimization of smart multifunctional engineering systems, using especially shape memory alloys, in various applications ranging from oil and gas to aerospace and biomedical industries.

Software Proficiency

Finite Element Analysis: ABAQUS Standard/Explicit/UMAT/ Python Scripting, COMSOL Multiphysics, ANSYS
CAE & Dynamic Analysis: SOLIDWORKS, MSC ADAMS
Programming: FORTRAN, MATLAB/Simulink, Python

Personal

I am a goal oriented, proactive person. I am capable of working as a member of a multidisciplinary team and am fully prepared to cooperate with others. I am a self-starter requiring minimal supervision to accomplish assigned tasks and have excellent communication skills. I have extensive experience in preparing technical reports, papers, and formal presentations at scientific conferences.

Work History (01/08 – present)

Dassault Systemes, Simulia Corp., FEA Development Intern, Simulia Western Region, 07/13 – 09/13

- Developed and implemented a physiological constitutive model for the coupled electrical-structural response of the human cardiac tissue using ABAQUS FEA subroutines.
- Participated as a finite element developer in the heart simulation team with the purpose of a full simulation of the human heart functionality.

Texas A&M University, Research Assistant, Shape Memory Alloy Research Team (SMART) Laboratory, 09/10 – present

- Developed smart shape memory alloy proppants and performed evaluation experiments for enhanced fracture conductivity in hydraulic fracturing.
- Developed and performed experiments for applications of shape memory alloy pipe couplers in oil and gas industry.

- Measured the contact pressure of shape memory alloy pipe couplers on a custom-designed load cell using strain gage rosettes and a feed-back controlled environmental heat chamber.
- Developed a user material subroutine UMAT in ABAQUS FEA package for thermal stress analysis of shape memory alloy parts and components.
- Designed and simulated shape memory alloy couplers for pipe sealing and coupling applications using FEA tools.
- Prepared technical reports on the design, modeling, and testing of pipe joining methods for TENARIS Corporation.

University of Toledo, Research Assistant, Dynamic and Smart Systems Laboratory, 01/08 – 05/10

- Characterized the material/mechanical behavior of SMAs through testing using Material Testing machines, Differential Scanning Calorimeter (DSC) and Scanning Microscope (SEM).
- Simulated the behavior of SMA biomedical devices using nonlinear FEA package COMSOL Multiphysics.
- Designed and developed the innovative biomedical device *SMArt*™ pedicle screw.
- Performed design and optimization for biomedical devices:
  The SMA thrombectomy device, and the SMA esophagus positioner.
- Performed as a technical assistant on the project for the design of a smart urban energy harvesting device.

Patents / Selected Publications

- Patent Application # 13126017
  Title: "Fixation Assembly Having Expandable Insert and Methods of Use Thereof"
  Inventors: Mohammad H. Elahinia, Vijay K. Goel, Majid Tabesh
- Tabesh, M., Goel, V., and Elahinia, M., "Shape Memory Alloy Expandable Pedicle Screw to Enhance Fixation in Osteoporotic Bone: Primary Design and Finite Element Simulation", ASME Journal of Medical Devices, 6(3), 2012.
- Tabesh, M., Atli, K.C., Rohmer, J., Franco, B.E., Karaman, I., Boyd, J.G., and Lagoudas, D.C., "Design of shape memory alloy pipe couplers: modeling and experiments", Proc. SPIE 8343, Industrial and commercial applications of smart structures, 2012, San Diego, CA, USA.
- Tabesh, M., Elahinia, M., Pourazady, M., "Modeling NiTi superelastic-shape memory antagonistic beams: A Finite Element analysis", Proceedings of the ASME 2009 Conference on Smart Materials, Adaptive Structures and Intelligent Systems, SMASIS, 2009, Oxnard, CA.
- Tabesh M., Nguyen T., Motlagh A.M., Elahinia M., "Development of an innovative energy harvesting device using MFC bimorphs", Proc. SPIE, Vol. 7288, 2009, San Diego, CA, USA.

Selected Graduate Courses

- Advanced Finite Element Methods, Elasticity, Plasticity, Continuum Mechanics, Nanomechanics, Micromechanics
- Advanced Dynamics, Spacecraft Dynamics
- Engineering Analysis of Smart Materials Systems, Fatigue of Metals and Structures, Design of Experiments

Activities and Interests / Languages

- Sports: Martial arts (Aikido), Swimming, Basketball
- Languages: Persian (native), English (fluent), German (basic)

References

- Dr. Dimitris Lagoudas, Senior Associate Dean for Research, College of Engineering,
  Texas A&M University, Department of Aerospace Engineering
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- Dr. Nuno Rebelo,
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- Dr. Jim Boyd,
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