Sai Deogekar

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SUMMARY

Highly motivated Mechanical Engineer with 9 years of experience in Computational Solid Mechanics and 2 years of experience in technical support for Finite Element Analysis. Proficient in the use of FEA Modeling and Simulation tools, Numerical Methods and Structural Mechanics. Skilled team player experienced in the Agile Scrum Methodology with high independence in remote environments.

EDUCATION

PhD, Mechanical Engineering   December 2019
Rensselaer Polytechnic Institute (RPI), Troy, NY, USA, *GPA:* **3.89/4.00**

Master of Science, Mechanical Engineering   August 2015
University of Cincinnati (UC), Cincinnati, OH, USA, *GPA:* **3.87/4.00**

Bachelor of Technology, Mechanical Engineering   May 2012
Visvesvaraya National Institute of Technology (VNIT), Nagpur, India, *GPA:* **8.79/10.00**

SKILLS

Modeling Tools: Ansys Mechanical, Ansys Workbench, Ansys LS-DYNA, Abaqus, Ansys SpaceClaim, CATIA
Programming Languages: High performance computing using C, C++, FORTRAN
Scripting Languages: MATLAB, Python
General: Microsoft Suite (Word, Excel, PowerPoint, Access, Outlook), Windows OS, Linux OS, shell scripting

EXPERIENCE

Senior Technical Support Engineer at Ansys, Inc.   Sept. 2021 – Oct 2021

- Apply expertise of Modeling and Simulation of structural mechanics to provide technical support to customers and channel partners and ensure highest levels of customer satisfaction.
- Lead projects involving partner universities and collaborate with the marketing, the course creation, and the infrastructure teams to ensure smooth and efficient deployment of high-quality technical courses.
- Proven record of taking up and solving problems that involve challenging modeling tasks and steep learning curves.

Technical Support Engineer II at Ansys, Inc.   Sept. 2019 – Sept. 2021

- Develop, create and deploy educational content that covers various topics such as stress analysis, modal analysis, thermal analysis, etc. through engaging videos and hands-on simulation models.
- Create finite element models to demonstrate various key features of the Ansys Mechanical software to train and coach new customers during online trainings and webinars.

Failure in Fibrous Materials   Aug. 2016 – Sept. 2019
PhD Thesis, *RPI*

- Performed nonlinear, static and dynamic finite element (FE) simulations to investigate failure mechanisms in fibrous materials such as biological tissues, paper, nonwovens, etc. and develop structure-property relationships between material strength and microstructural parameters.
- Developed a new class of fibrous materials with superior performance and longevity (25% increase in strength and toughness) by modifying the network topology to increase its inherent heterogeneity.

Multiscale Modeling of Facet Capsule Ligament (FCL)   Dec. 2015 – Sept. 2019
Research Project, RPI (in collaboration with University of Pennsylvania)

- Collaborated with an interdisciplinary team of eight people to model deformation and damage in a human spine ligament (FCL), using a multiscale FEA code (written in C++). This method eliminates the need to develop constitutive material models and instead solves a sub-scale problem to get material behavior.

Characterizing the Behavior of Fibrous Materials with Nonlocal Continuum Model Oct. 2015 – Oct. 2017
Research Project, RPI (in collaboration with Université de Lorraine)

- Collaborated with a team of four people to develop a nonlocal continuum theory for material characterization of fibrous materials and to quantify the relations between mechanical properties of the effective continuum and micro-structural parameters of the material.

Research Assistant at University of Cincinnati Simulation Center Feb. 2013 – June 2015
Research Project in collaboration with Procter & Gamble, UC

- Worked in the Baby Care department to analyze the product performance of various components of diapers using M&S tools (Abaqus, Python). Simulated nonlinear systems with large deformations, material non-linearity and contact, and supported development and extension of simulation programs.
- Documented the simulation results in weekly technical reports and made recommendations to guide development work.

Computational Study of Dynamic Brittle Fracture Using the Phase-field Method Dec. 2012 – June 2015
Master's Thesis, UC

- Implemented a mathematical model of the phase-field approach in MATLAB and in C (using SPOOLES library) to study crack propagation under dynamic loading, eliminating the need for tracking discontinuities numerically.
- Modeled branching of cracks and interaction among multiple cracks in glass and ceramic composite structures using dynamic, implicit FEM.

High Performance Implementation of 2D Laplace Solver Oct. 2013 – Dec. 2013
Research Project, UC

- Implemented and parallelized (using Message Passing Interface) an additive Schwarz method in C.

SELECTED PUBLICATIONS

- **Deogekar, S.**, and R. C. Picu, *Strength of Stochastic Fibrous Materials Under Multiaxial Loading*, Soft Matter, 17 (3), 704, (2021).
- **Deogekar, S.**, Z.Yan, R. C. Picu, *Random Fiber Networks with Superior Properties Through Network Topology Control*, Journal of Applied Mechanics, 86 (8), 081010, (2019).
- **Deogekar, S.**, and R. C. Picu, *On the Strength of Random Fiber Networks*, Journal of the Mechanics and Physics of Solids, 116, 1, (2018).
- Picu R. C., **S. Deogekar** and M. R. Islam, *Poisson Contraction and Fiber Kinematics in Tissue: Insight from Collagen Network Simulations*, Journal of Biomechanical Engineering, 140 (2), 021002, (2018).
- Berkache, K., **S. Deogekar**, I. Goda, R. C. Picu, and J. F. Ganghoffer, *Construction of Second Gradient Continuum Models for Random Fibrous Networks and Analysis of Size Effects,* Composite Structures, 181, 347, (2017).
- **Deogekar, S.**, and K. Vemaganti, *A Computational Study of the Dynamic Propagation of Two Offset Cracks Using the Phase Field Method*, Engineering Fracture Mechanics, 182, 303, (2017).

GRADUATE ACADEMIC COURSES

Advanced Finite Element Method	Fracture Mechanics and Fatigue	Advanced Solid Mechanics
High Performance Computing	Modeling of Materials	Continuum Mechanics
Scientific Computing	Plasticity	Elasticity

ACHIEVEMENTS AND AWARDS

- Collaboration and Teamwork Award, Ansys   2021
- Edison Award for Education (awarded to the Ansys Innovation Courses team)   2021
- Materials Research Society, Oral Presentation Award, Fall Meeting   2018
- Procter & Gamble Tuition Award   2013 – 2015
- University Graduate Scholarship, University of Cincinnati   2012 – 2015
- Fastest Car Award, Supra Society of Automotive Engineers   2011