

Matthew J. Pais

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Experience

Senior Technical Specialist
Dassault Systèmes Simulia Corp. Dearborn, MI
April 2016 – Present

- Go to Market messaging and technical solution definition with an emphasis on **3DEXPERIENCE**
- Internal enablement activities with an emphasis on **3DEXPERIENCE**
- Lead for technical sales activities for SIMULIA products in North America for customers in the Aerospace & Defense, Consumer Packaged Goods and Consumer Goods-Retail industries including coordination and promotion of SIMULIA product offerings across many Dassault Systèmes organizations (enablement, marketing, R&D, sales, technical sales)
- Significant travel (30+%) to engage with customers
- Technical solution definition activities (demonstrations, presentations, training) focused on customer value across many industries with an emphasis on **3DEXPERIENCE**

Technical Specialist
Dassault Systèmes Simulia Corp. Dearborn, MI
September 2013 – April 2016

- Business case generation and subsequent implementation coordination with SIMULIA R&D of key customer product enhancement requests
- Coordination of regular customer enablement and training offerings promoting increased use of SIMULIA product offerings
- Global technical lead for SIMULIA product offerings at an aerospace company
- Support of multiple SIMULIA product evaluations

Technical Specialist
Dassault Systèmes Simulia Corp. Philadelphia, PA
May 2011 – September 2013

- Created targeted hour training snippets on topics including: Composite modeling, midsurface modeling, solid meshing, XFEM
- In-depth training on Abaqus functionality including: Abaqus/CAE, Abaqus/Explicit, buckling, contact, composites, element selection, fasteners, fracture mechanics, geometry import and meshing, metal inelasticity, Python scripting
- On-site client support for the commercial finite element software package Abaqus at an aerospace company

Graduate Research Assistant
University of Florida Gainesville, FL
August 2007 - May 2011

- Created custom extended finite element (MXFEM) code using MATLAB with ability to model cracks, bimaterial cracks, material interfaces, and holes independent of the finite element mesh, calculate mixed-mode stress intensity factors using the domain form of the interaction integral and model quasi-static crack growth
- Development and implementation of a reanalysis algorithm for modeling quasi-static crack growth with the XFEM
- Development of use of kriging for increased accuracy in numerical integration of fatigue crack growth models, enabling larger step sizes for modeling fatigue growth
- Guest lecturer for Aircraft Structures I and Finite Element Analysis and Applications
- Modeling crack initiation by optimization facilitated by reanalysis of the XFEM
- Monitoring the implementation of XFEM in the commercial software package Abaqus
- Teaching assistant for Finite Element Analysis and Applications

Intern for National and Homeland Security Idaho Falls, ID
Idaho National Laboratory June 2010 - August 2010

- Created MATLAB code to generate a statistically significant grain microstructure for a polycrystalline material from a mean and standard deviation of grain size
- Modeling a tension testing specimen for calibration of traction-separation relationship between experimental data for use in other Abaqus models
- Modeling crack initiation and propagation along grain boundaries using surface-to-surface traction-separation relationship based on cohesive crack model with Abaqus
- Modeling stress fields in a modified compact tension specimen with known displacements

Undergraduate Research Assistant Columbia, MO
University of Missouri September 2005 - May 2007

- Fabrication of high aspect ratio hydroxyapatite nanofibers and nanoparticles
- Fabrication and mechanical testing of polymer-based dental composites reinforced with hydroxyapatite nanofibers and nanoparticles, silica nanoparticles, and silicon carbide nanofibers
- Fabrication and mechanical testing of PLA/hydroxyapatite nanofiber composites for bone tissue engineering applications

Undergraduate Researcher Rolla, MO
NSF Sponsored Research Experience for Undergraduates June 2005 - July 2005

- Design and fabrication with another undergraduate student of a smart child car seat which would alert the installer if the car seat was installed incorrectly

Education

University of Florida Gainesville, FL
Doctor of Philosophy in Mechanical Engineering Graduated December 2011
Master of Science in Mechanical Engineering Graduated December 2009

- Ph.D. Dissertation: *Variable Amplitude Fatigue Analysis Using Surrogate Models and Exact XFEM Reanalysis*

University of Missouri Columbia, MO
Bachelor of Science in Mechanical Engineering Graduated May 2007
Minor in Mathematics, Magna Cum Laude, Honors Scholar

- B.S. Thesis: *Hydroxyapatite Reinforced Dental Composites*

Skills

Advanced: 3DEXPERIENCE, ABAQUS, CATIA, Enterprise Knowledge Language, Nastran, Microsoft Office, Python, Visual Basic

Basic: HyperMesh, MATLAB, MQL, Patran, ProEngineer/Mechanica

Publications

Journal Papers

Pais, M., Kim, N.H. "Predicting fatigue crack growth under variable amplitude loadings with usage monitoring data," *Advanced in Mechanical Engineering*, Vol. 7, No. 2, pp 1-11, 2015.

Coppe, A., Pais, M., Haftka, R.T., Kim, N.H. "Remarks on using simple crack growth model in predicting remaining useful life," *Journal of Aircraft*, Vol. 49, No. 6, pp. 1965-1973, 2012.

Pais, M., Viana, F.A.C., Kim, N.H., "Enabling high-order integration of fatigue crack growth with surrogate model," *International Journal of Fatigue*, Vol. 43, pp. 150-159, 2012.

Pais, M., Yeralan, S., Davis, T., Kim, N.H. "An exact reanalysis algorithm using incremental Cholesky factorization and its application to crack growth modeling," *International Journal of Numerical Methods in Engineering*, Vol. 91, No. 12, pp. 1358-1364, 2012.

Conference Papers

Coppe, A., Pais, M., Kim, N.H., "Identification of equivalent damage growth parameters for variable amplitude loading," *Annual Conference of the Prognostics and Health Management Society 2011*, Montreal, Quebec, September 2011.

Coppe, A., Pais, M., Haftka, R.T., Kim, N.H. (2011) "Equivalent damage growth parameters using a simplified model," *ASME 2011 International Design Engineering Technical Conference & Computers and Information in Engineering Conference*, Washington DC, August 2011.

Pais, M., Viana, F.A.C., Kim, N.H., "High-order integration of fatigue crack growth using surrogate model," *52nd AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Denver, Colorado, April 2011.

Freiling, T., Neth, J.A., Pais, M., Gonzales, J.F., Pinhero, P.J. "Modeling of bismuth embrittlement of a copper substrate," 2011 Materials Research Society Spring Meeting and Exhibit, San Francisco, California, April 2011.

Pais, M., Viana, F.A.C., Kim, N.H., "Surrogate models for high-order integration of fatigue crack growth models," *2011 Graduate Student Council Interdisciplinary Research Conference*, Gainesville, Florida, February 2011.

Coppe, A., Pais, M., Kim, N.H., Haftka, R.T., "Identification of equivalent damage growth parameters for general crack geometry," *Annual Conference of the Prognostics and Health Management Society 2010*, Portland, Oregon, October 2010.

Pais, M., Kim, N.H., Davis, T., "Reanalysis of the extended finite element method for crack initiation and propagation," *51st AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Orlando, Florida, April 2010.

Pais, M., Kim, N.H., Peters, J., "Discussions on modeling weak discontinuities independent of the finite element mesh," *10th US National Congress on Computational Mechanics*, Columbus, Ohio, July 2009.

Pais, M., Kim, N.H., "Modeling failure in composite materials with the extended finite element and level set method," *50th AIAA/ASME/ASCE/AHS/ASC Structures, Structural Dynamics, and Materials Conference*, Palm Springs, California, May 2009.