

JAIME A. HERNANDEZ

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EDUCATION

University of Illinois at Urbana-Champaign

Ph.D. in Civil and Environmental Engineering

Expected July 2015

GPA: 3.85/4.00

- Dissertation Title: Contact stress prediction between deformable tires and pavements at various operating conditions using a validated finite element model
- Advisor: Dr. Imad L. Al-Qadi

Ohio University

M.S. in Civil and Environmental Engineering

July 2010

GPA: 3.80/4.00

- Thesis Title: Evaluation of the response of perpetual pavement at accelerated pavement loading facility: finite element analysis and experimental investigation
- Advisor: Dr. Shad Sargand

National University of Colombia

B.S. in Civil Engineering

February 2006

GPA: 4.20/5.00

- Thesis Title: Design of structures with seismic isolation: effect of flexibility of reinforcement
- Advisor: Dr. Jose D. Aristizabal

RESEARCH EXPERIENCE

University of Illinois at Urbana-Champaign

Graduate Research Assistant

August 2010 - Present

Champaign, IL

- Leading role in the projects “The Impact of Wide-Base Tires on Pavement Damage – A National Study”, “Influence of Tire Parameters on Roadway Structures”, and “Numerical Prediction of Three-Dimensional Tire-Pavement Contact Stresses.”
- Perform advanced finite element simulation of flexible pavements, truck tires, and their interaction.
- Prepared an awarded proposal for the Airport Cooperative Research Program (ACRP).
- Analyzed tire-pavement contact stresses to be used in advanced numerical modeling of flexible pavements.
- Developed a python scripts to automate the generation of input files and post-processing of results for the finite element analysis of flexible pavements.

Ohio University

Graduate Research Assistant

June 2008 - July 2010

Athens, OH

- Investigated the effect of thickness on perpetual pavements based on accelerated pavement testing data of four instrumented sections.
- Analyzed collected data from instrumented pavement section in Angelica, NY, including Environmental and Falling Weight Data.
- Participated in the crew that instrumented three pavement sections: one Perpetual Pavement in Angelica, NY, and the other two Rigid Pavements in Syracuse, NY.

National University of Colombia

Research Assistant

January 2006 - May 2008

Medellin, Colombia

- Studied of special topics in structural engineering including dynamic and static stability.
- Prepared an awarded proposal for COLCIENCIAS (Colombian equivalent to National Science Foundation)

TEACHING EXPERIENCE

University of Illinois at Urbana-Champaign

August 2014 - December 2014

Teaching Assistant

Urbana, IL

- Taught basic topics in pavement engineering such as: classification of pavement systems, pavement design variables, and pavement design methods.
- Refine lectures, held office hours, and graded assignments and exams.
- Substituted for professor.

National University of Colombia

March 2003 - December 2005

Teaching Assistant

Medellin, Colombia

- Taught topics in advanced mathematics for engineers such as: Fourier Analysis, Partial Differential Equations and Complex Variables.
- Hosted weekly workshops for students.
- Graded assignments and exams.
- Substituted for various professors.

ACADEMIC HONORS AND AWARDS

- Graduate Research Award Program on Public-Sector Aviation Issues from the ACRP.
- First Place Winner in the Younger Member Paper Contest. ASCE Transportation and Development Institute 2013 Airfield and Highway Pavement Conference.
- 2012-2013 Academic General Scholarship from the Society of Hispanic Professional Engineers (SHPE).
- 2012 Society of Hispanic Professional Engineers, Chicago Chapter Fellowship.
- 2007 Young Researcher, awarded by COLCIENCIAS.

SELECTED PUBLICATIONS

- **Hernandez, J. A.** and Al-Qadi, I. L. (2015). Hyperelastic Modeling of Wide-Base Tire and Prediction of its Contact Stresses. *Journal of Engineering Mechanics, (ASCE)*. Accepted for publication
- **Hernandez, J. A.**, Al-Qadi, I. L., and Ozer, H. (2015). Baseline Rolling Resistance for Tires On-Road Fuel Efficiency Using Finite Element Modeling. *International Journal of Pavement Engineering*. Accepted for publication
- **Hernandez, J. A.** and Al-Qadi, I. L. (2015). Airfield Pavement Response Due to Heavy Aircraft Takeoff: Advanced Modeling for Wheel Interaction Consideration. *Transportation Research Record, Journal of the Transportation Research Board*. 2471, 40-47
- Bai, Y., Gungor, E., **Hernandez, J. A.**, Ouyang, Y., and Al-Qadi, I. L. (2015). Optimal Pavement Design and Rehabilitation Planning Using a Mechanistic-Empirical Approach. *EURO Journal on Transportation and Logistics*, 4(1), 57-73
- **Hernandez, J. A.**, Gamez, A., Al-Qadi, I. L., and De Beer, M. (2014). Analytical Approach for Predicting Three-Dimensional Tire-Pavement Contact Load. *Transportation Research Record, Journal of the Transportation Research Board*, 2456, 75-84
- **Hernandez, J. A.**, Uribe-Henao, A. F., and Aristizabal-Ochoa, J. D. (2014) Stability and Free Vibration Analyses of Cantilever Shear Buildings with Semi-Rigid Support Conditions and Multiple Masses. *Journal of Science and Vibration*, 333(5), 1390-1407
- **Hernandez, J. A.** and Aristizabal, J. D. (2008). Static and Dynamic Stability of an Elastically Restrained Beck Column with an Attached End Mass. *Journal of Sound and Vibration*, 312(4), 789-800

RELATED SKILLS

- Abaqus 6.13, Python, MatLab 2012, AutoCad 2013, Latex, Mathematica 7, MathCad, SAP 2000, Visual Basic and Macros in Microsoft Excel.
- Academic and communicative fluency in English and Spanish