Exponent®
Engineering & Scientific Consulting

Reza Nasouri, Ph.D.

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Professional Profile

Dr. Nasouri specializes in structural mechanics, dynamics and vibrations, mechanics of materials, fracture mechanics, and finite element analysis (FEA). He has broad experience performing numerical analyses for different applications, including industrial equipment, oil and gas, automotive, aerospace, and buildings under extreme loads such as explosions, ballistic impact, high-energy impact, environmental conditions (e.g., hurricane, wind, flood), and harsh temperature environments.

Dr. Nasouri has extensive experience with the commercial finite element software packages Abaqus and LS-DYNA.

Prior to joining Exponent, he conducted various blast and impact analyses to evaluate structural integrity, as well as problems involving structural dynamics, smooth particle hydrodynamics (SPH), composite materials, and crashworthiness & occupant safety. Dr. Nasouri has experience applying his expertise to a variety of design evaluations and optimizations, and root cause failure analyses pertinent to both structural integrity and protective design systems. Dr. Nasouri received his Ph.D. from the Civil Department at the University of Texas at San Antonio (UTSA). His Ph.D. research focused on developing high-fidelity computational (FEA) models for prognosis and mitigation of weldment cracking in high-mast illumination poles due to hot-dip galvanization. The research approach used a coupled temperature-displacement simulation to provide a solution for the high temperature and stress/displacement fields induced by the hot-dip galvanizing process. During his Ph.D., Dr. Nasouri was the lead FEA engineer evaluating the dynamic response of structural bridges subjected to natural hazards using fluid-structure interaction (FSI) methods. While at UTSA, Dr. Nasouri was a technical advisor to the multi-disciplinary UTSA transportation team which developed novel renewable energy solutions. Specifically, Dr. Nasouri was involved in implementing piezoelectric, thermal electric generators (TEG), and cooling modules to simulate the mechanism for harvesting mechanical and thermal energies from roadways. While at UTSA, he also served as a finite element analysis instructor along with providing formal mentorship to Ph.D. candidates focusing on various applications of FEA methods in real-world problems. At Exponent, Dr. Nasouri is interested in extending his skillset to support high-fidelity simulations accounting for design evaluation, risk analysis, and failure analysis of biomedical devices. Additionally, Dr. Nasouri's expertise in impact analysis is applicable to injury biomechanics, including blast injury, ballistic injury, spine and traumatic brain injury, and injury mitigation.

Academic Credentials & Professional Honors

Ph.D., Civil Engineering, University of Texas, San Antonio, 2019

M.S., Civil, Geotechnical-Structural Engineering, University of Texas, San Antonio, 2015

B.S., Civil Engineering, University of Tehran, Iran, 2012

Student of the Year Award, Transportation Research Board (TRB), DC, 2019

Prior Experience

Project I Consultant, Baker Engineering and Risk Consultant, Inc., 2019-2021

Professional Affiliations

American Society of Civil Engineers (ASCE)

Publications

Nasouri, R., A. Shahriar, A. Majlesi, A. Matamoros, A. Montoya, and F. Y. Testik. "Hydrodynamic demands on coastal bridges due to wave impact." In Bridge Maintenance, Safety, Management, Life-Cycle Sustainability and Innovations, pp. 1241-1248. CRC Press, 2021.

Shahriar, A., Majlesi, A., Nasouri, R., Montoya, A., Matamoros, A., & Testik, F. "Generation of Periodic Wave Using Lagrange-Plus Remap Finite Element Method for Evaluating the Vulnerability of Coastal Bridges to Extreme Weather Events." In Tran-SET 2020, pp. 133-140. Reston, VA: American Society of Civil Engineers, 2021.

Majlesi, A., Nasouri, R., Shahriar, A., Montoya, A., & Matamoros, A. "Structural Vulnerability of Coastal Bridges under a Variety of Hydrodynamic Conditions." In Tran-SET 2020, pp. 120-125. Reston, VA: American Society of Civil Engineers, 2021.

Nasouri, R., Nguyen, K., Montoya, A., Matamoros, A., Bennett, C., & Li, J. "Geometric Configuration Effects on the Formation of Weld Toe Cracks during the Galvanizing of High Mast Illumination Poles." In Tran-SET 2020, pp. 126-132. Reston, VA: American Society of Civil Engineers, 2021.

Montoya, A., Matamoros, A., Nasouri, R., Ikpah, E., & Majlesi, A. "Optimizing the Geometric Configuration and Manufacturing Process of High Mast Illumination Poles [supporting dataset]." (2020).

Montoya Ph D, A., Matamoros Ph D, A., Nasouri, R., Ikpah, E., & Majlesi, A. Optimizing the Geometric Configuration and Manufacturing Process of High Mast Illumination Poles. (2020).

Nguyen, K., Nasouri, R., Bennett, C., Matamoros, A., Li, J., & Montoya, A. Galvanizing-Induced Distortion in Steel Plate Girders. II: Effects of Welding and Galvanizing Practices. Journal of Bridge Engineering, 24(12), 04019111. (2019).

Nguyen, K., Nasouri, R., Bennett, C., Matamoros, A., Li, J., & Montoya, A. Galvanizing-induced distortion in steel plate girders. I: Effects of girder geometry. Journal of Bridge Engineering, 24(12), 04019110. (2019).

Nasouri, R., Nguyen, K., Montoya, A., Matamoros, A., Bennett, C., & Li, J. Simulating the hot dip galvanizing process of high mast illumination poles. Part I: Finite element model development. Journal of Constructional Steel Research, 162, 105705. (2019).

Nasouri, R., Nguyen, K., Montoya, A., Matamoros, A., Bennett, C., & Li, J. Simulating the hot dip galvanizing process of high mast illumination poles. Part II: Effects of geometrical properties and galvanizing practices. Journal of Constructional Steel Research, 159, 584-597. (2019).

Nasouri, R., A. Matamoros, A. Montoya, and F. Y. Testik. "Vulnerability of coastal bridges under extreme hurricane conditions." Bridge Structures 15, no. 3 (2019): 89-101.

Gholikhani, M., Nasouri, R., Tahami, S. A., Legette, S., Dessouky, S., & Montoya, A. (2019). Harvesting kinetic energy from roadway pavement through an electromagnetic speed bump. Applied Energy, 250, 503-511.

Tahami, S. A., Gholikhani, M., Nasouri, R., Dessouky, S., & Papagiannakis, A. T. (2019). Developing a new thermoelectric approach for energy harvesting from asphalt pavements. Applied energy, 238, 786-795.

Nguyen, K., Nasouri, R., Bennett, C. R., Matamoros, A., Li, J., & Montoya, A. H. (2018). Thermomechanical modeling of welding and galvanizing a steel beam connection detail to examine susceptibility to cracking. Materials Performance and Characterization, 7(2), 165-190.

Nguyen, K., Nasouri, R., Bennett, C., Matamoros, A., Li, J., & Montoya, A. (2017). Sensitivity of predicted temperature in a fillet weld T-joint to parameters used in welding simulation with prescribed temperature approach. Proc., Science in the Age of Experience, 232-247.

Rezaeimalek, S., Nasouri,R., Huang, J., Bin-Shafique, S., & Gilazghi, S. T. (2017). Comparison of short-term and long-term performances for polymer-stabilized sand and clay. Journal of traffic and transportation engineering (English edition), 4(2), 145-155.

Peer Reviews

Journal of Bridge Engineering, ASCE