

**DEGREES:**

**Master of Science in Engineering** with specializations in:

- Structural Engineering
- Environmental Engineering
- Transportation Engineering
- Materials Engineering

**Doctor of Philosophy**

**RESEARCH LABS:**

- Computer Lab
- Geographical Information Systems Lab
- Hazardous Waste and Environmental Design Treatment Lab
- Hydraulics Lab
- Materials Lab
- Soils Lab
- Surveying Lab
- Water Quality / Unit Operations Lab

**FACULTY PROFILES**



**Dr. Anderson, PE**, is an Associate Professor of Civil Engineering who has 15 years of experience focusing on transportation, traffic modeling, freight transportation, and GIS-T applications. He has completed numerous projects for different transportation agencies. Dr. Michael Anderson's research focuses on a variety of transportation topics, such as transportation modeling, transit operations, freight planning and Geographic Information Systems. His work is currently funded by the US DOT through the University Transportation Center program as part of the Center for Freight Infrastructure Research and Education (C-FIRE), University Transportation Center of Alabama and the Alabama Department of Transportation.



The Department of Civil and Environmental Engineering and the College of Engineering at UAHuntsville is pleased to welcome **Dr. Ying-Cheng Lin**, Assistant Professor of Civil and Environmental Engineering. Dr. Lin's research areas include the behavior and design of steel structures, seismic performance-based design, nonlinear modeling and analysis, and the reliability analysis of structural systems. He was awarded the Best Oral Presentation

Award at the 8<sup>th</sup> International Conference on Urban Earthquake Engineering, Tokyo, Japan, in 2011 and received the P.C. Rossin Doctoral Fellowship, College of Engineering and Applied Science at Lehigh University in 2010 and 2011. Dr. Lin earned his Bachelor's in civil engineering and M.S. in structural engineering from the National Taiwan University. He received his Ph.D. in Civil Engineering from Lehigh University in 2012. His PhD research was part of the NSF NEESR-SG project on self-centering damage-free seismic-resistant steel frame systems. His research focus was to improve the resilience of civil infrastructures by improving connection behavior and system performance of steel structures.

**UAHuntsville CEE Department**  
**Dr. Houssam Toutanji**  
**Professor and Chair**

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<http://www.uah.edu/eng/cee>

# CEE Department Research

## PhD Student—Rajesh Vuddandam

Rajesh is working on the usage of fiber reinforced polymers (FRP) in strengthening/rehabilitation of existing structures and understanding the debonding failure mechanics of strengthened systems with FRP. Although many models were developed to address other type of failures, debonding failure is a challenged research area that still needs to be addressed for safe design. As such, his general research focus is to study the present analytical, empirical models, update or develop a new model to address the different aspects of debonding failures for flexurally strengthened beams. Additionally, an advanced finite element software (ABAQUS) will be used to validate the model. His advisor is Dr. Houssam Toutanji.

## PhD Student—Dong Wang

Dong is working on a fictitious crack model for reinforced concrete. This model is an implementation of the famous fictitious crack model proposed by A. Hillerborg. In this theoretical model, the nonlinear stress fictitious crack relation will be applied and the crack propagation of three-point-bending beam will be simulated. Different reinforcing materials such as steel and fiber reinforced polymer rebars will be modeled in this study. His advisor is Dr. Houssam Toutanji.

## PhD Student—Shigeyuki Ueno

Shigeyuki's research is focused on the prediction of the interfacial bond and shear stress between FRP and concrete substrate. FRP is usually applied as reinforcement to tension side of existing concrete structures. Debonding between concrete and FRP is induced by shear force under longitudinal tensile force applied to FRP, and predicting the maximum debonding force is the main goal of this research by using the fracture mechanics and the theory of elasticity. His advisor is Dr. Houssam Toutanji. (Shown on right)

## PhD Student—Hernando Gauto

Hernando is working on the next generation of life support equipment for the International Space Station and the Orion Crew Capsule CO<sub>2</sub> Removal. These tasks consist of improving the existing and future life support equipment for long duration in space and future deep space habitat, such as the Mars Mission. The specific goals are to increase performance capabilities, reduce power consumption and volume and mass. The test protocol will also measure with ruggedness and durability. His advisor is Dr. Kathleen Leonard.

## PhD Student—Tahmina Kahn

Tahmina is working on standardization of rural transit performance measures by eliminating the influences of uncontrollable factors to make a better comparison among different rural transit systems in Alabama. Based on correlation values among factors and variables of performance measures, influence of selected factors was eliminated by applying simple division tool. Finally, individual and aggregated ranking of performance measures for different transit systems was carried out. Her advisor is Dr. Michael Anderson.

## PhD Student – Mary Catherine Dondapati

Mary is working on developing relationships between employment data and freight shipments. Based on national employment data and freight origin and destination values, she is seeking to identify those industries that are directly related to freight traffic. Her work is intended to be used in the future by transportation planners to incorporate freight activities into their planning efforts. Her advisor is Dr. Michael Anderson.

## PhD Student – Jeffrey Wilson

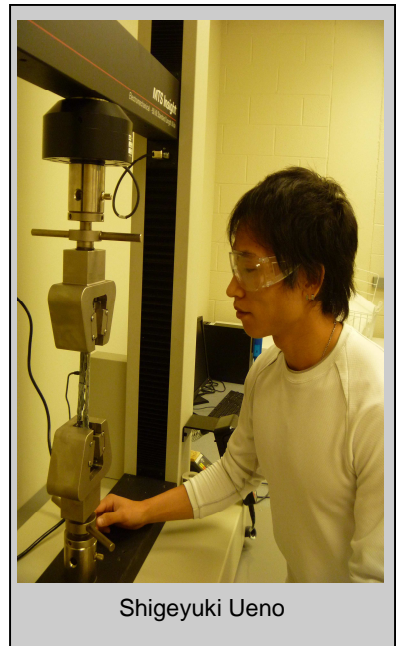
Jeffrey is working on building traffic models from traffic counts. One of the objectives of this project is to show how these models can be used by small communities as part of their transportation planning effort and to allow these communities to build traffic models within their available resources. Statistical analysis is being conducted to find out how many traffic counts it takes to build a reasonable model. His advisor is Dr. Michael Anderson.

## PhD Student—Hamed Ardalan

Hamed is working on a new method for using the Strain Wedge Model (SWM) technique for the analysis of pile stabilized slopes. The suggested method allows the assessment of soil pressure and its distribution along the pile segment above and below the slip surface based on soil-pile interaction. The method also accounts for the influence of pile spacing on the interaction between the pile and surrounding soils and pile capacity. His advisor is Dr. Mohamed Ashour.

## MSE Student—Christopher Goff

Chris is working on the development of a parametric study to compare specific hardware configurations performance in order to optimize water extraction from different soil depths. For prototype extraction scenarios, the following system metrics will be evaluated: overall energy balance requirements (power generation, transmission, conversion to microwaves, and soil heating), heat flow (soil heat capacity, sublimation, ice condensation, heat radiation), and mass flow (water collection, storage scenarios). This work will involve a close collaboration with NASA to develop a set of preliminary system requirements. His advisor is Dr. Houssam Toutanji.



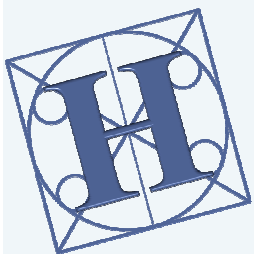
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