Natalia Zuniga-Garcia

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Qualifications

- Interest in statistics, data science, and machine learning with a strong transportation engineering background.
- Experience in data modeling using R and Python with knowledge of big data statistical models.
- Excellent written and verbal communication skills with experience in presentations for technical and non-technical individuals.
- A fast and passionate learner, solution-oriented, with excellent collaboration, interpersonal, and leadership skills.

Education

- **The University of Texas at Austin** *Ph.D. in Civil Engineering* | *Transportation* — May 2020 *(Expected)*
- **The University of Texas at Austin** *M.Sc. in Statistics and Data Sciences* (GPA: 3.814) — May 2018
- **The University of Texas at Austin** *M.Sc. in Civil Engineering* | *Infrastructure Materials* (GPA: 3.709) — May 2017
- **University of Costa Rica** *B.Sc. in Civil Engineering* (GPA: 8.46/10) — December 2012

Notable Research Projects

- **Zuniga-Garcia, N.** (2018). **Spatial Pricing Empirical Evaluation of Ride-Sourcing Trips Using the Graph-Fused Lasso for Total Variation Denoising** (Master's Thesis in Statistics). The University of Texas at Austin, Austin, TX, United States.
  - Use of a big data statistical models to assess the implications of trips density in the ride-sourcing pricing scheme.
  - Cleaning and mining of data from more than 1.5 million ride-sourcing trips, collected by an Austin based e-hailing company, using several R libraries, such as: *dplyr*, *lubridate*, *ggplot2*, *leaflet*, among others.
- **Zuniga-Garcia, N.**, H.W. Ross, and R.B. Machemehl. (2018). **Multimodal Level of Service Methodologies: Evaluation of the Multimodal Performance of Arterial Corridors.** Transportation Research Record, 0361198118776112.
  - Processing and mining of Intelligent Transportation Systems (ITS) data, such as Bluetooth and Wavetronix, using *dplyr* in R.
  - Evaluated ITS data to estimate speed, delay, and traffic volume. Used R to obtain statistics and graphical representations.
- **Zuniga-Garcia, N.**, W. Martinez-Alonso, A. de Fortier Smit, F. Hong, and J.A. Prozzi. (2018). **Economic Analysis of Pavement Preservation Techniques.** Transportation Research Record, 0361198118768515.
  - Implemented a stochastic life-cycle cost analysis of pavement preservations techniques, using a Monte Carlo simulation in MATLAB, with information from more than 14,000 construction projects in Texas highway network.
- **Zuniga-Garcia, N.** (2017). **Predicting Pavement Friction with Improved Texture Characterization.** (Master's Thesis in Civil Engineering). The University of Texas at Austin, Austin, TX, United States.
  - Developed Multiple Linear Regression models to predict highway friction using transportation infrastructure data.
  - Implemented signal processing techniques (such as linear filters) in Python's *SciPy*, to enhance pavement texture characterization.

Experience

- **Graduate Research Assistant** *The University of Texas at Austin (Prof.: Randy B. Machemehl, Jorge A. Prozzi)* 2015 - Present
  - Performed statistical modeling of transportation data for several funded research projects.
  - Authored and co-authored more than 20 research reports, journal publications, and conference proceedings.
  - Presented research work at several national and international conferences.
- **Teaching Assistant** *The University of Texas at Austin: Cockrell School of Engineering*
  - CE 392M Public Transportation Engineering *(Prof.: Dr. Randy B. Machemehl)* — Fall 2018
  - CE 367P Pavement Design and Performance *(Prof.: Dr. Jorge A. Prozzi)* — Spring / Fall 2016
- **Research Engineer** *University of Costa Rica: Sustainable Urban Development Program (ProDUS)* — 2013 - 2014
  - Use of Geographic Information Systems (GIS) and remote sensing in urban development projects.

Skills

- **Languages** English *(Full professional proficiency)* | Spanish *(Native proficiency)* | Portuguese *(Elementary proficiency)*
- **Programming Languages** *Advanced proficiency*: R, *Intermediate*: Python | MATLAB, *Basic*: PostgreSQL | C++
- **Software Packages** SPSS | SAS | MS Office | LaTeX | ArcGIS | AutoCAD

Extracurricular Activities

- Mentor: **Directed Reading Program (DRP)** Department of Mathematics UT-Austin (Mentee: Emily Nguyen) — Fall 2018
- President: **Women's Transportation Seminar (WTS)** UT-Austin Student Chapter — 2017 - 2018
- Seminar Series Director: **Graduate Engineering Council (GEC)** Cockrell School of Engineering UT-Austin — 2017-2018
- Awards: Women in Engineering Collaborative Leader *Award*, WTS Diane Woodend Jones Leadership Legacy *Scholarship* 2018