Natalia Zuniga

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Education

The University of Texas at Austin

- *Ph.D. in Civil Engineering – Transportation Engineering* (GPA: 4.00) 2018 - Present
  - Dissertation: "Characterizing emerging urban transportation modes: Statistical models and methods."
  - Received 10+ competitive scholarships and awards for research, teaching, and leadership excellence, including:
    2020 Graduate Research Award, Airport Cooperative Research Program (ACRP) (10 awards, ∼150 applicants)
    2020 GLUE Mentor Award, Women in Engineering Program (WEP) (2 awards, ∼80 mentors)
    2018 Leadership Legacy Scholarship, Women's Transportation Seminar (WTS) International (1 award, ∼150 applicants)
- *M.Sc. in Statistics and Data Sciences* (GPA: 3.81) May 2018
  - Full scholarship. Coursework in the area of statistics, data sciences, big data, machine learning, and deep learning.
- *M.Sc. in Civil Engineering – Infrastructure Materials* (GPA: 3.71) May 2017
  - Full scholarship. Coursework in the area of transportation operations, pavement engineering, and public asset management.

University of Costa Rica

- *B.Sc. and Licentiate in Civil Engineering* (GPA: 8.46/10) December 2012

Professional Experience

- *Center for Transportation Research (CTR) – UT Austin* 2015 - Present
  Research Assistant —- Performed data analysis and transport-operation evaluations for several funded research projects. Published 4 first-authored and 2 co-authored papers (peer-reviewed), and 19 conference proceedings [Google Scholar].

  Relevant Projects

  1. **Machine learning for e-scooter trips: Poisson Gradient Boosting Machine (GBM) regression**
     A negative binomial regression is used to model e-scooters as first/last miles solutions to transit access using 12+ million trips in Austin, TX. A methodological framework is implemented to solve confounding variables problems using GBM.
  2. **Big data statistical models for e-hailing taxis: Graph-Fused Lasso (GFL) spatial smoothing**
     The problem of measuring the spatial and temporal variation in driver productivity is considered proposing an analytical framework that integrates a spatial smoothing approach to tackle data-sparsity problems. A further methodological contribution was developed to estimate the probability distribution of drivers' productivity as a function of space and time.
  3. **Intelligent transportation systems (ITS) for airport congestion management**
     Airport congestion management procedures were developed using ITS and open-data sources to evaluate the impact of e-hailing taxis on ground-access to airports. ANOVA models were implemented to test mean speed differences across periods using ABIA airport (Austin, TX) as a case study. Sponsored by the Federal Aviation Administration (FAA).
- *Statistics and Data Sciences Department – UT Austin* Fall 2017
  Statistical Consultant (*Student*) —- Provided statistical consulting services to students, faculty, and private companies.
  - Used neural networks, ARIMA, and multiple linear regression models to forecast electric demand in Texas.
  - Developed a growth curve analysis to evaluate age and sex differences in laboratory-controlled experiments with animals.
- *Sustainable Urban Development Program (ProDUS) – University of Costa Rica* 2013 - 2014
  Transport Engineer —- Collaborated in the preparation of urban planning evaluations for several public-funded projects.
  - Designed, implemented, and analyzed surveys and field data collection processes for transportation and urban studies.

Extra-Curricular Achievements

- **Chair:** *Tenant Advisory Board (TAB), University Housing and Dining – UT Austin* 2019-2020
  Lead the proposal of community improvement projects ($500k+) that affected ∼800 students residents of the university.
- **Committee Volunteer:** *Artificial Intelligence Committee (AED50) – Transportation Research Board (TRB)* 2019-2020
  Improved the communication channels by developing updates to the committee website that reaches 200+ members.
- **President:** *Women's Transportation Seminar (WTS), Student Chapter – UT Austin* 2017-2018
  Reactivated the student chapter, successfully engaging 100+ students and professionals by promoting diverse activities.

Additional Skills

Languages: English (*Full professional*) | Spanish (*Native*) | Portuguese (*Elementary*)
Programming Languages: R | Python | SQL | MATLAB | JAVA | C++ **Tools:** Tableau | SAS | ArcGIS | GCP | AWS