Agustin Guerra

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Professional Profile

I am a highly motivated engineering professional with **+5** years of experience in the transportation industry and **+3** years of research experience in traffic engineering. My research interest has spanned topics including human factors, driving simulator studies, microsimulation, traffic flow theory, and optimization frameworks considering Connected and Automated Vehicles (CAVs) capabilities. Currently, my PhD dissertation focuses on developing optimization algorithms for **real-time** applications considering CAVs at the arterial level.

Education

PhD Candidate in Civil Engineering — Aug. 2019 – Expected May 2023
University of Florida — *Gainesville, FL*

MS in Civil Engineering — Aug. 2017 – May 2019
University of Kansas — *Lawrence, KS*

BS in Civil Engineering — Mar. 2008 – May 2013
Universidad Tecnologica de Panama — *Panama, PA*

Research Experience

Graduate Research Assistant — Aug. 2019 – Present
University of Florida

- Develop optimization algorithms in Python for arterials considering CAVs capabilities
- Assist in the implementation of optimization algorithm for isolated intersections
- Facilitate the coordination of projects' activities to meet deadlines

Master's Thesis — May. 2018 – May. 2019
University of Kansas

- Conducted a driving simulator study to assess human behavior under-connected environments during discretionary lane-changing (DLC) maneuvers
- Implemented a predictive DLC fuzzy logic model in a driving simulator

Summary of Research Skills

- Project management, research methodology & design, participant recruitment, data collection, data management, data analysis (R, SPSS), Python (Matplotlib, CPLEX, Gurobi, Numpy, Pandas, SciPy), LaTeX, oral presentations, Education and Public Outreach (EPO)

Teaching Experience

Teaching Assistant — Sep. 2020 – Dec. 2020
University of Florida

- Explained and assisted students with traffic flow theory assignments
- Created reference material to assist students to understand key concepts

Guest Lecturer — Sep. 2021 – Dec. 2021
University of Florida

- Educated on identifying deficiencies of existing signal control strategies
- Introduce CAVs concepts, discrete optimization methods, Python-programming language as a tool for developing optimization frameworks for CAVs

Publications

Peer-Reviewed Journals

[1] **Guerra, A.**, L. Elefeteriadou. Platooning Trajectory Optimization for Connected Automated Vehicles in Coordinated-Arterials. *Transportation Research Record*, 2022 (under-review)

Presentations

[1] **Guerra, A.**, L. Elefteriadou. A Trajectory-based Method for Platoon Formation of Connected and Automated Vehicles. *7th Annual UTC Conference for the Southeastern Region*, 2022

[2] **Guerra, A.**, L. Elefeteriadou. Platooning Trajectory Optimization for Connected Automated Vehicles in Coordinated-Arterials. *The Transportation Research Board (TRB) 101st Annual Meeting*, 2022

[3] **Guerra, A.**, L. Elefeteriadou. Platooning Trajectory and Signal Phasing Optimization for Connected Automated Vehicles in Coordinated-Arterials. *The Transportation Research Board (TRB) 101st Annual Meeting*, 2022

[4] **Guerra, A.**, M. Asgharzadeh, A. Kondyli. Discretionary Lane Changing Decisions for Connected-Vehicles Based on Fuzzy Logic. *Transportation Research Board 99th Annual Meeting Transportation Research Board*, 2020

Technical Reports

[1] Manjunatha P., L. Elefteriadou, M. Hunter, H. Zhou, S. Noei, **A. Guerra**, L. Carvalho, R. Favero, A. Guin, A. Saroj. Evaluation of Advanced Vehicle and Communication Technologies through Traffic Microsimulation (Project I5) *Phase II, Task 1*, 2022

[2] Elefteriadou L., **A. Guerra**, P. Manjunatha. Extended Development and Testing of Optimized Signal Control with Autonomous and Connected Vehicles, FDOT Contract BDV31-977-109, *Plan for Field Deployment*, 2021

Industry Experience

Highway & Traffic Consultant May 2019 – Aug. 2019
WSP *Panama*

- Provided safety assessment for roadways, interchanges, and intersections
- Developed geometric design proposals
- Conducted earthwork estimation for highway projects

Highway Engineer Nov. 2012 – Aug. 2017
Louis Berger *Panama*

- Developed geometric designs for proposal and as-built drawings for highway projects. Project portfolio comprises several projects in the Latin American region (Panama, Colombia, Honduras, and Peru) adding up to $3 billion in construction amount
- Coordinated with different departments (geotechnical, hydraulic, and pavement) to meet deadlines
- Created digital model terrain for highway projects
- Verified slope stability analysis using the Slide-Rockscience software
- Supervised and mentored drafter team with 4 people

Involvement/Leadership

- **ITE University Chapter Vice President**: Coordinated student seminars, and ITE activities — 2021 – 2022
- **Student Representative at the UFTI Internal Steering Committee**: Promoted engagement activities between industry professionals and students — 2020 – 2022
- **Media Manager at KU Fulbright Student Association**: Led dissemination of activities promoted by the Fulbright Student Board, 2018 — 2018 – 2019

Fellowships & Awards

- **Anne Brewer Academic Scholarships** : Awarded by the Intelligent Transportation Society (ITS) Florida Chapter — 2022
- **Fulbright Fellowship**: Awarded by the U.S Bureau of Educational and Cultural Affairs to complete a Master's Degree at the University of Kansas — 2017
- **Global Best Project in Roads and Highways**: Awarded by the ENR for the Coastal Beltway project in Panama — 2015

Professional Societies

ASCE: American Society of Civil Engineers — 2022 – Present
ITE: Institute of Transportation Engineers — 2019 – Present

References

Lily Elefteriadou, PhD: Barbara Goldsby Professor, University of Florida — elefter@ce.ufl.edu
Alexandra Kondyli, PhD: Associate Professor, University of Kansas — akondyli@ku.edu
Aurora Izquierdo: Civil Structural Engineer II, WSP — Aurora.Izquierdo@wsp.com
Juliana Canas: Senior Advisor, First Climate — juliana.canas-vanegas@firstclimate.com