

Luis D. Alvergue

CONTACT INFORMATION	6716 Bishop Pass Austin, TX 78744	(337)499-4798 lalver1@gmail.com https://lalver1.github.io
SUMMARY	Electrical engineer with both academic and industry experience working in diverse projects. Strong background in mathematics, modeling, simulation, and coding. Solution oriented with creative problem solving and communication skills.	
PERSONAL	Naturalized US citizen. Bilingual in English and Spanish, basic French.	
COMPUTER SKILLS	Python (including SciPy Stack and Django/Flask), JavaScript/HTML/CSS, SQL, MS Power BI, GIS, Linux Shell Scripting, Git, MS Office, LaTeX	
EXPERIENCE	Arcadis , Baton Rouge, LA / Austin, TX <i>Staff Engineer</i> July 2016 – Present Analyzed speed and crash data using pandas (Python Data Analysis Library) and suggested safety countermeasures based on computation of correlation coefficients. Developed a web tool (using PHP, D3.js, and the ESRI ArcGIS JavaScript API) based on the 2016 Highway Capacity Methodology to analyze the effects of work-zones on freeway facilities. Used Python scripts to implement extract, transform, load (ETL) processes for large traffic micro-simulation data sets. Developed Systems Engineering Analyses and designed electrical systems for Intelligent Transportation Systems (ITS). Gresham, Smith and Partners , Baton Rouge, LA <i>Intelligent Transportation Systems Engineer</i> June 2015 – July 2016 Implemented a traffic camera video player client for Android (using Java) and iOS (using Swift) devices. Designed and implemented SQL table/view/report solutions. Configured, operated, and maintained video distribution systems using Java and Bash scripts. Assisted in preparing and writing “Systems Engineering Analysis for ITS” documents. Assisted in the design, configuration, and operation of ITS for several State Departments of Transportation. Louisiana State University , Baton Rouge, LA <i>Instructor</i> Spring 2017, Spring 2018 Taught “Topics in Control System Design” (EE4580) in the Division of Electrical and Computer Engineering. Topics included root locus, frequency response, and pole placement controller design methods using MATLAB and Simulink. <i>Instructor/Postdoctoral Research Associate</i> June 2013 – May 2015 Taught “Circuits II” (EE2130) covering fundamentals of power system analysis. Implemented a testbed for developing security/encryption algorithms for Android smartphones in Java. Coded a secure TCP/IP messaging app using an AES encryption implementation developed in-house and extensively documented it. Did research on security issues and state estimation for the Smart Grid.	
EDUCATION	Louisiana State University , Baton Rouge, LA, USA <i>Graduate Student, Department of Electrical and Computer Engineering</i> 2005 – 2013 <ul style="list-style-type: none">• Ph.D. Electrical Engineering (Systems and Control), Mechanical Engineering minor• Master of Science in Electrical Engineering. Spring 2008 McNeese State University , Lake Charles, LA, USA <i>Undergraduate Student, Department of Engineering</i> 2000 – 2004 <ul style="list-style-type: none">• Bachelor of Science in Engineering (Electrical). Mathematics minor	
PROFESSIONAL ACTIVITIES	Professional Engineer (Electrical and Computer) in Louisiana (#0042598) and Texas (#133755) IEEE (Institute of Electrical and Electronics Engineers)	

VOLUNTEERING
ACTIVITIES

Open Austin - Code for America Brigade

PROJECTS

Transportation Data Analysis and Modeling

Implemented traffic data analysis methodologies and developed traffic models. Tasks included analyzing speed and crash data using pandas (Python Data Analysis Library) and suggesting safety countermeasures based on computation of correlation coefficients. Developed a web tool (using PHP, SQL, D3.js, and the ESRI ArcGIS JavaScript API) based on the 2016 Highway Capacity Methodology to quantify the effects of work-zones on freeway facilities. Led data collection efforts (using traditional methods as well as Big Data resources such as StreetLight data and Wejo connected vehicle data) and developed information dashboards and other visualizations using Power BI and Matplotlib. Developed maintenance dashboards in Power BI to track the ITS devices inventory of transportation agencies.

Projects carried out during Jul 2016 - Present at Arcadis.

Intelligent Transportation Systems for Transportation Agencies

Assisted in the design, configuration, operation, and maintenance of ITS for the following agencies: Louisiana DOTD, Alabama DOT, Pinellas County Public Works, and Lexington-Fayette Urban County Government. Tasks included implementing a real-time event notification system by importing a 511 traveler information system XML feed into an SQL database (that I designed) using the Net.WebClient class in PowerShell. Periodically ran the import as a stored procedure in T-SQL using SQL Server Agent. Also configured, operated, and maintained video distribution systems (server and client side code for a website and a Java application for the video distribution software). Implemented a traffic camera video player client for Android and iOS devices. Developed Systems Engineering documents such as Concept of Operations and System Requirements for the San Francisco Municipal Transportation Agency and other State DOTs.

Projects carried out during Aug 2015 - Feb 2016 at Gresham, Smith and Partners and from Jul 2016 - Present at Arcadis.

Electrical System Design for Transportation Infrastructure

Designed single phase (three-wire) electrical systems for ITS (traffic monitoring camera and dynamic message sign sites) and roadway lighting (roundabouts and signalized intersections) following National Electrical Code (NFPA 70) and ANSI/IES RP-8-18 guidelines. Tasks included voltage drop calculations, transformer sizing, breaker sizing, battery backup system design, and photometric design.

Projects carried out during Jul 2016 - Present at Arcadis.

Testbed for Secure Communications for Android Devices

Implemented a platform/testbed for security algorithms and architectures for the transmission of TCP/IP data between Android OS smartphones. The security component of this project involved the implementation of: (a) encryption, and (b) secure virtual private network (VPN) connections using an AES encryption implementation developed in-house.

Project carried out by L. Alvergue, G. Chacon, and X. Dillard during Jan - Jun 2014 at Louisiana State University.

REFERENCES

Available upon request