Luis D. Alvergue

CONTACT INFORMATION

6716 Bishop Pass
Austin, TX 78744

cell: (337)499-4798
email: lalver1@gmail.com
GitHub: lalver1

SUMMARY

Electrical engineer with both academic and industry experience working in diverse projects. Strong background in mathematics, simulation, and coding. Solution oriented with creative problem solving and communication skills.

PERSONAL

Naturalized US citizen
Bilingual in English and Spanish, basic French

EDUCATION

Louisiana State University, Baton Rouge, LA, USA

Graduate Student, Department of Electrical and Computer Engineering **2005 – 2013**

- 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

Undergraduate Student, Department of Engineering **2000 – 2004**

- Bachelor of Science in Engineering (Electrical). Mathematics minor

COMPUTER SKILLS

Python (including NumPy and pandas), HTML/CSS/JavaScript/PHP, Git, MATLAB/Simulink, T-SQL, Vissim, Vistro, FREEVAL-WZ, MS Office, LaTex, Linux

EXPERIENCE

Arcadis, Baton Rouge, LA / Austin, TX

Staff Transportation Engineer **July 2016 – Present**

Assisted in the design and operations/maintenance of Intelligent Transportation Systems (ITS) and in performing traffic studies for the Louisiana Department of Transportation. 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.

Gresham, Smith and Partners, Baton Rouge, LA

Transportation Services Engineer **June 2015 – July 2016**

Assisted in the design, configuration, and operation of ITS for several State Departments of Transportation. Implemented a traffic camera video player client for Android and iOS devices. Designed and implemented database table/view/report solutions. Configured, operated, and maintained video distribution systems. Assisted in preparing and writing "Systems Engineering Analysis for ITS" documents.

Louisiana State University, Baton Rouge, LA

Instructor **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.

Instructor/Postdoctoral Research Associate **June 2013 – May 2015**

Taught "Circuits II" (EE2130) in the Division of Electrical and Computer Engineering.
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.

Shell Exploration and Production Co., Houston, TX

Summer Post Grad Intern **May 2009 – August 2009, June 2008 – August 2008**

Worked in the Unconventional Oil division in the Production Technology team. Developed a circuit model for an electric heater to be used for the in-situ heating of oil sands and oil shale. Analyzed time domain data from experiments to validate the model and suggested a combination of voltage and current measurements to be used as a thermal signature of the heater. Evaluated two Well Performance Simulators developed at Shell and recommended a way forward for IUP (in situ upgrading process) well performance modeling.

Professional Activities

Registered 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

Intelligent Transportation Systems and Traffic Studies for Louisiana DOT

Assisted in the design and operations/maintenance of ITS. 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, 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. Assisted in performing several traffic studies; work included field visits, data collection (using traditional methods as well as Big Data resources), data analysis, visual displays of quantitative information using Power BI and Matplotlib, and report writing.
Projects carried out by the Baton Rouge Traffic Group during Jul 2016 - Present at Arcadis.

Intelligent Transportation Systems for State 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 configuring, operating, and maintaining 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. Also implemented 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. Assisted in preparing and writing "Systems Engineering Analysis for ITS" documents.
Projects carried out by P. Hsu and L. Alvergue during Aug 2015 - Feb 2016 at Gresham, Smith and Partners.

Testbed for Secure Communications for Android Devices

We 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.

Temperature Based Automated Control of Electrical Heaters: Thermal Signature of Curie Elements and Electromagnetic Modeling of Self-Regulating Curie Heaters

We developed a model of a Curie heater coupled with a variable voltage transformer (VVT) and proposed a control system that would automatically trigger a tap change in the VVT and effectively maintain a constant optimal heater temperature. The heater and VVT were modeled as a time-varying differential equation representing an RL series circuit and coded in MATLAB/Simulink. We validated the model with experimental data that had previously been collected at one of Shell's test sites.
Project carried out by L. Alvergue, D. Arora, C. Harris, S. Nguyen, A. Harvey and D. Burns during the Summer of 2008 at Shell Oil Co. Unconventional Oil R&D.

References

Available upon request