

## AREAS OF INTEREST

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Integration of renewable energy resources; analysis of dynamic resource allocation problems; online optimization and learning with applications in power and energy systems.

## EDUCATION

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### University of Colorado, Boulder, CO, USA

- Ph.D. in Electrical Engineering 2019 - Present  
– Advisor: Prof. Emiliano Dall’Anese.
- M.S. in Electrical Engineering 2019 - 2021

### Universidad de Los Andes, Bogotá, Colombia

- M.S. in Electrical Engineering 2012 - 2013  
– Advisor: Prof. Nicanor Quijano.
- B.S. in Electrical Engineering 2007 - 2011
- B.S. in Electronic Engineering (Minor: Bioengineering)

## PUBLICATIONS

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### PREPRINTS

- R1. **A. M. Ospina**, N. Bastianello and E. Dall’Anese. *Feedback-Based Optimization with Sub-Weibull Gradient Errors and Intermittent Updates*. IEEE Control Systems Letters, submitted January 2022, under review. [Online] arXiv preprint arxiv:2109.06343.
- R2. **A. M. Ospina**, Y. Chen, A. Bernstein and E. Dall’Anese. *Learning-Based Demand Response in Grid-Interactive Buildings via Gaussian Processes*. XXII Power System Computation Conference, submitted October 2021, under review.
- R3. **A. M. Ospina**, A. Simonetto and E. Dall’Anese. *Time-Varying Optimization of Networked Systems with Human Preferences*. IEEE Trans. on Control of Network Systems, submitted March 2021, under review. [Online] arXiv preprint arXiv:2103.13470.
- R4. **A. M. Ospina**, K. Baker and E. Dall’Anese. *Estimation of Power System Sensitivities: Low-rank Approach and Online Algorithms*. IEEE Trans. on Power Systems, submitted May 2021, under review. [Online] arXiv preprint arXiv:2006.16346.

### JOURNALS

- J1. **A. M. Ospina** and N. Quijano. *Distributed Control of Small-Scale Power Systems using Noncooperative Games*. International Journal of Electrical Power and Energy Systems. April, 2016. Vol. 82, pp. 535-544.

### CONFERENCES

- C1. **A. M. Ospina**, A. Simonetto and E. Dall’Anese. *Personalized Demand Response via Shape-Constrained Online Learning*. 2020 IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (IEEE SmartGridComm’20). November 11-13, 2020. Virtual Conference.
- C2. **A. M. Ospina** and M. Kezunovic. *A Data-Driven Framework for Optimal Placement of Grid-Connected Solar Generation*. 2019 IEEE Power & Energy Society General Meeting. August 4-8, 2019. Atlanta, GA USA.

## RESEARCH EXPERIENCE

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### University of Colorado, Boulder

*Graduate Research Assistant*

January 2019 - Present

*Boulder, CO, USA*

- Synthesis and analysis of data-driven learning methods for power and energy systems.
- Measurement-based estimation methods and their applications in network systems.

*Projects:*

- *Autonomous energy system program*, funded by National Renewable Energy Laboratory (NREL).
- *Advancing Sustainability through Powered Infrastructure for Roadway Electrification (ASPIRE)*, funded by NSF.

### Texas A&M University

*Graduate Research Assistant*

September 2017 - December 2018

*College Station, TX, USA*

- Development of methodologies for the integration of solar forecasting in power systems planning.

*Projects:*

- Integration of Solar Generation and Electrical Vehicles into the Smart Grid, funded by Qatar National Research Foundation (QNRF).
- *Smart Grids Big Data (SGBD)*, funded by National Science Foundation (NSF).

### Universidad de Los Andes

*Graduate Research Assistant*

July 2013 - September 2014

*Bogotá, Colombia*

- Development an optimization model to minimize the load shedding and coordinate distributed energy resources in power systems.

- Identification of game theoretic applications in power systems.

*Project:*

- *Dynamic resource allocation using game and graph theory, with engineering applications*, funded by COLCIENCIAS.

### Universidad de Los Andes

*Professional Project Assistant*

July 2011 - November 2011

*Bogotá, Colombia*

- Development methodologies for building AC and DC grounding related to rectifier substations.

- Validation of a methodology to determine the optimal allocation of active filters for compensation of harmonic distortion and reactive power supply.

*Project:*

- *Reliable Feeder and Electric Power Quality Management in Electrical Systems Mass Transit*, funded by CODENSA.

## INDUSTRY EXPERIENCE

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### Sandia National Laboratories (SNL)

*Intern - Electric Power Systems Research*

October 2021 - Present

*Albuquerque, NM, USA*

- Intern at ARPA-E Performance-based Energy Resource Feedback, Optimization, and Risk Management (PERFORM) project.

### National Renewable Energy Laboratory (NREL)

*Intern - Power Systems Engineering Research Center*

May 2019 - August 2019

*Golden, CO, USA*

- Design of a model-free predictive control via online learning for building energy management.

### National Mining and Energy Planning Unit (UPME)

*Specialized Engineer*

September 2015 - August 2017

*Bogotá, Colombia*

- Provided technical and economical evaluation for the incorporation of energy sources in the national transmission system at different voltage levels.
- Supported the formulation of large-scale electrical infrastructure projects of national interest to meet the Colombian energy demand in the medium and long term.
- Performed power flow analysis, contingency analysis and short circuit analysis, as well as economic and technical evaluations of connection requests for the national transmission system.

- Performed optimal detection of non-technical power losses in the distribution system of Cundinamarca.
- Identified load-profiles (residential, commercial and industrial) based on energy profiles.
- Controlled and supervised projects and indicators of the Control Loss Section.

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**TEACHING EXPERIENCE****Universidad de Los Andes, Bogota, Colombia:**

2013	Graduate Teaching Assistant. Fundamentals of Circuits Theory.
2013	Graduate Teaching Assistant. Analysis and Synthesis of Circuits.
2011	Undergraduate Teaching Assistant. Fundamentals Circuits Theory.
2010	Undergraduate Teaching Assistant. Mathematics Department - Algebra and Differential, integral, and Vectorial Calculus.
2009	Undergraduate Teaching Assistant. Mathematics Department - Algebra and Differential, integral, and Vectorial Calculus.

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**SOFTWARE SKILLS**

DigSILENT PowerFactory, OpenDSS, Matlab/Simulink, Labview (Certified LabVIEW Associate Developer), ArcGIS, Microsoft Office, L<sup>A</sup>T<sub>E</sub>X.

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**PROFESSIONAL SERVICES****Professional Memberships/Affiliations:**

2012 - Present	IEEE Student Membership.
2017 - Present	IEEE Power and Energy Society Membership (PES), IEEE Industry Applications Society Membership (IAS), IEEE Women in Engineering Membership (WIE), IEEE Young Professional Membership, IEEE Women in Power.

**Student Chapters Services at Texas A&M University:**

2018	Committee Member for Texas Power and Energy Conference (TPEC 2019).
2017 - 2018	Committee Member for Texas Power and Energy Conference (TPEC 2018).
2017 - 2018	Officer Member in IEEE PES-PELS-IAS Joint Student Chapter.
2017 - 2018	Programming Officer/Treasurer in IEEE Women in Engineering Chapter.

**Services at University of Colorado Boulder:**

2020 - 2021	Graduate student representative at Climate Committee ECEE department.
2020 - 2021	Mentor at Graduate Peer Mentoring Program.

**Referee for Journals and Conferences:**

IEEE Transactions on Smart Grid; Electric Power Systems Research; Journal of Control, Automation and Electrical Systems; International Journal of Electrical Power and Energy Systems.

IEEE Workshop on Power Electronics and Power Quality Applications (PEPQA 2013, 2015, 2017); IEEE Texas Power and Energy Conference (TPEC 2018); IEEE International Conference on Compatibility, Power Electronics, and Power Engineering (CPEPOWERENG 2018); IEEE PES General Meeting (GM 2019, 2022); IEEE International Conference on Communication, Control, and Computing Technologies for Smart Grids (SmartGridComm 2019); IEEE Colombian Conference on Automatic Control (CCAC 2019); European Control Conference (ECC 2021); IEEE PES Innovative Smart Grid Technologies (ISGT 2022).

## LANGUAGES

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ENGLISH: Fluent.

SPANISH: Native.

FRENCH: Basic (Delf A1).

## HONORS AND AWARDS

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| 2019        | Paper selected as one of the Best Conference Papers on Distribution Systems, Microgrids, and Renewables submitted to the 2019 IEEE PES General Meeting.                             |
| 2018 - 2019 | W. John & A. Neumann Graduate Scholarship Award, Texas A&M University.  |
| 2018        | Department of Electrical and Computer Engineering, Texas A&M University award to participate in the 2018 IEEE Woman In Engineering (WIE) International Leadership Conference (ILC). |
| 2018        | Graduate Student Travel Grant, Department of Electrical and Computer Engineering, Texas A&M University.   |
| 2016        | Executive Development Program in Energy Planning for Andean Region Fellowship, Latin American Energy Organization - OLADE, Bucaramanga, Colombia.                                   |
| 2014        | Young Researcher Fellowship, Colombian Department of Science, Technology, and Innovation - COLCIENCIAS, Bogotá, Colombia.   |
| 2013/2011   | Graduate Fellowship, Graduate Teaching and Research Assistant, Universidad of Los Andes, Electrical and Electronic Engineering Department, Bogotá, Colombia.                        |
| 2010/2011   | Top Ranked on National Exam for Electronics/Electrical Engineers, National Institute for the Evaluation of Education, Bogotá, Colombia.   |
| 2010/2009   | Pentágono Fellowship, Department of Mathematics, Universidad de Los Andes, Bogotá, Colombia.  |