

Jose Daniel Lara

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Education

M.Sc/PhD, Energy and Resources Group

University of California Berkeley 2015-Present

- Coursework in microeconomics, interdisciplinary analysis of energy systems, risk and optimization.
- Graduate Student Research Assistant in Biomass electricity generation adoption in California, focused on gasification technology.

Master of Science (M.Sc.), Electrical and Computer Engineering

University of Waterloo 2012-2014

- Coursework in power system stability, control and operation, distribution systems engineering, intelligent system design, linear and numerical optimization.
- Thesis: Robust Energy Management Systems for Isolated Microgrids Under Uncertainty.
Advisors: Claudio Cañizares, PhD and Kankar Battacharya, PhD
- Electrical & Computer Engineering Graduate Award Winter 2013, Spring 2013 (every term eligible)

Electrical Engineering Licenciante (Graduation with honors)

University of Costa Rica 2009-2010

- Accredited by the Canadian Engineering Accreditation Board (CEAB)
- Coursework in simulation and modeling, power flows, voltage stability, protections, grounding, power electronics, power system automation, and applied math.
- Thesis: Multi-objective Optimization of Distributed Generation in Distribution Networks. Advisor: Gustavo Valverde. PhD

Bachelor in Science (B.Sc.) Electrical Engineering

University of Costa Rica 2005-2009

- Program completed with focus in electric power and electrical machines. Additional coursework in Mechanical Engineering for credit.
- Graduation Project: Induction Motor AC Drive simulation for automotive propulsion application.
Advisor: Victor Alfaro, PhD. Developed in collaboration with Dr. Bimal Bose.

Publications and Presentations

- Olivares, D.E.; Lara, J.D.; Canizares, C.A.; Kazerani, M., "Stochastic-Predictive Energy Management System for Isolated Microgrids," in *IEEE Transactions on Smart Grid*, vol.6, no.6, pp.2681-2693, Nov. 2015
- Lara, J.D.; Olivares, D.E.; Canizares, C.A.; Kazerani, M., "Robust Energy Management System for Isolated Microgrids", submitted to *IEEE Sustainable Energy*, (under review).
- Lara, J.D., "Robust Energy Management System for Isolated Microgrids" Presented in the 10th International Symposium in Microgrids, Tianjin China, November 2014.
- Lara, J.D.; Nathwani, J., "Value of Electricity vs Cost - Resolving the customer benefit dichotomy in ratemaking" *The Electricity Journal*, Volume 27, Issue 6, July 2014, Pages 86-94.
- Lara, J. D.; Vieto, I., "Optimal Sizing of Static Converters for Single Phase Feeding of Three Phase Induction Motor" *XXth International Conference on Electrical Machines (ICEM'2012) France September 2012*
- Lara, J. D., "Methodological aspects for the analysis of the impact of plug-in vehicles on power grid", presented on *COPIMERA (Interamerican Congress of Electrical and Mechanical Engineering)*. San José, 2011.
- Lara, J. D., "Roadmap towards the implementation of electrical vehicles in distribution networks" presented on *CREL (Regional Congress of clean electricity)*. San José, 2011.

Professional Work Experience

Hatch LTD: Intermediate Electrical Engineer

October 2014-July 2015

- Team-member of Electro-technologies group, with focus on technology development.
- Developed a simulation platform to test mathematical models and apply optimization algorithms for real-time dispatch of electric power assets in remote microgrids on a cRIO-9068 platform.
- Participated in the development of new project prospecting and knowledge transfer to current Hatch employees for future maintenance of the developed products.

University of Waterloo: Research Associate ecoENERGY Innovation Initiative

August 2012-December 2014

- Developed a commercially viable, utility grade controller for islanded electric grids, with a focus on communal remote microgrids.
- Responsibilities included developing optimization algorithms suitable for real-time dispatch, implementation in hardware and coordination with industrial partner.

WISE - Waterloo Institute for Sustainable Energy Sustainable Energy Research Analyst

May 2014-August 2014

- Perform primary research to examine the electricity cost and value data for improving regulatory decisions. Provide guidance and assistance to undergraduate research assistants as required.

Nissan Costa Rica: Nissan Leaf Project Engineer

July 2010-August 2012

- Research and development of the required platform for the implementation on the Nissan LEAF in Costa Rica, analysis of battery performance and charging standards.
- Design of level 2 charging stations for Electric Vehicles and preliminary analysis for level 3 charging stations.
- Coordination with the electric utilities and governmental agencies regarding the deployment of the required technology and negotiation with Nissan headquarters for demonstration projects

Vara Blanca Hydro, Suerkata Hydro

July 2009-July 2010

- Commissioning of equipment, work force coordination, electromechanical equipment repair supervision, equipment testing.
- Technical interconnection studies for run of river hydro projects such as Unbalanced power flow analysis and short-circuit.

Trend Micro Costa Rica, Costumer Support.

December 2004-December 2007

- Technical support to clients on antivirus and security related issues for business and enterprise.

Independent Engineering Consultant Projects:

Project ED-2887: Analysis of the National High Voltage Grid in Costa Rica

June 2011-March 2012

Prepared for the National Controlling Authority, under the interest of evaluating the operational practices of the high voltage grid. The evaluation was made under FERC practices for steady state operation, including N-1, N-1-1 and N-n events in the local and Central American regional grid.

Client Vara Blanca Hydro, Suerkata Hydro

August 2010-July 2012

External consultant in the construction of Vara Blanca Hydro power plant and Suerkata Hydro operation. Projects developed:

- Monthly analysis and reporting of hydro stations availability, yearly production projections and operational status of the equipment.
- *Tariff Analysis for Vara Blanca Hydro*
- *Grid Interconnection Analysis for Vara Blanca Hydro*

Academic Experience

Pontifical University of Chile, Invited Researcher July-August 2015

Invited by Prof. Daniel Olivares to work at the OCM group on the implementation of optimization algorithms in embedded computers for Smart Grid applications.

University of Waterloo, Teaching Assistant.

Teacher assistant for ECE 390 Course Engineering Design, Economics, and Impact on Society and Teacher Assistant for ECE ECE 6613 PD: Power System Analysis Course.

University of Costa Rica, Instructor.

Part time Instructor Professor on Linear Circuits and Electrical Machines. Supervision of 5 undergraduate projects and 3 courses on PSS/E simulation, Power Systems I and Electrical Machines simulation.

Other Activities

Relevant Independent Coursework and Certifications.

- 2009 Frederich Ebert Stiftung Costa Rica Agent for a Change Program certification.
- 2011 Risk Management on Hydro Power by International Centre for Hydropower.
- 2011 Environmental Management on the Tropics On-line Course *Denmark Technical University*
- 2012 IEEE Smart Grid Technical Tutorial.
- 2012 MITACS Foundations of Project Management I
- 2014 MITACS Foundations of Project Management II
- 2014 University of Waterloo Student Leadership Program
- 2014 The Age of Sustainable Development MOOC Course via Coursera
- 2014 IEEE PES Boston Chapter Microgrid Course
- 2014 NREL Energy Systems Integration Workshop

Volunteer Experiences

Member of AIESEC at University of Costa Rica 2008-2010
Board of Advisors AIESEC National University of Costa Rica 2011-2012
External Advisor Group AIESEC Wilfrid Laurier University 2012-2014
Board of Advisors AIESEC University of Waterloo 2012-2014