Manuel Navarro Catalán, M.Sc.

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EDUCATION

Rensselaer Polytechnic Institute	Masters of Science, Electrical Engineering **Specialization:** Power Systems	Spring 2020
The University of Texas at Austin	Bachelors of Science, Electrical Engineering **Specialization**: Power Systems	Spring 2018
KTH Royal Institute of Technology	Exchange Program, Stockholm, Sweden	Spring 2017
Peking University	Globex Exchange Program, Beijing, China	Summer 2016

PROFESSIONAL EXPERIENCE

Engineer I – *Electric Reliability Council of Texas (ERCOT), Austin, TX* 01/21-Present

-Member of ERCOT's Engineering Development Program.

-Rotation Program through the following teams: Network Model Maintenance, Network Model Administration, Transmission Planning, Resource Integration, Operations Analysis, Forward Markets, Market Analysis & Validation, Grid and Market Solutions, Shift Engineering and Operations Support.

-Projects: Data Analysis on Operations Data, NREL's dGen software implementation, Extract Transform Load (ETC) Tool maintenance and development.

Operations Analysis Intern – *Electric Reliability Council of Texas (ERCOT), Austin, TX* 05/20-08/20

- Created Python based Data Analysis scripts for ancillary service requirements.
- Designed a program and method to read ERCOT's load and generation minute data, calculate ancillary service requirements, display results and determine service requirements with no user input.
- Determined regulation requirements for coming years.
- Analyzed, processed and performed Python based data analysis on 1 minute interval electric load/generation data.

Renewable Energy Intern – *Pan American Energy, Buenos Aires, Argentina* 06/18-08/18

- Mapped the electrical system of Argentina using ArcMap.
- Created action plans for the future expansion of the renewable energy division within Pan American Energy.
- Created a georeferenced database of the wind energy sources in Argentina.

Engineering Intern – *KFW Engineers and Surveying, San Antonio, TX* 07/17-08/17

- Built GIS maps and exhibits for project distribution and completion.
- Acted as network administrator, support, and IT technician for the company.
- Created a Mexico GIS map that graphically displayed Mexico's geographical and demographic features.
- Upgraded, installed and monitored over 140 computers.

ACADEMIC EXPERIENCE

Research Assistant – *Rensselaer Polytechnic Institute, Troy, NY* 08/18-12/20

- Conducting research for ALSET Laboratory under the supervision of Dr. Luigi Vanfretti.
- Test and develop applications for electrical models for computer simulation.
- Research on cyber-physical systems, exploring the transition of electric systems to the digital world.
- Developing a mass model translation Python based application for Smart Grids (from PSSE to Modelica) for New York Power Authority.

Undergraduate Research Assistant – *KTH Royal Institute of Technology , Stockholm, Sweden* 04/17-05/18

- Worked under the supervision of Dr. Luigi Vanfretti at the Electric Power and Energy Department.
- Created a Linux installation manual for Dymola and OpenModelica software.
- Created a user manual for OpenModelica and for Dymola under Linux of computer assignments for a Modelica course.
- Created a user manual of the OpenIPSL library under Linux using OpenModelica and Dymola.

Teaching Assistant – *Dominion Energy, Richmond VA* 05/19

- Course: Introduction to Power Systems Modeling and Simulation using the Modelica Language.

Teaching Assistant – *McMaster University, Hamilton ON* 05/19

- Course: Introduction to Modeling and Simulation using the Modelica Language.

PUBLICATIONS

M. Navarro Catalan and L. Vanfretti, "Over Current Relay Modeling using Modelica with Cross-Verification against a Validated Model," 7th Workshop on Modeling and Simulation of Cyber-Physical Energy Systems, 15 April 2019, Montreal, Canada.

S. Dorado Rojas, **M. Navarro Catalan,** M. de Castro Fernandes and L. Vanfretti, "Performance Benchmark of Modelica Time-Domain Power System Automated Simulation using Python" 2nd American Modelica Conference, 23-25 March 2019, Boulder, Colorado.

Navarro Catalan, M., Du, P., Mago, N., Gonzalez, E., Lee, R., Li, W., & Vera, S. P. (2021, July). Ancillary Service Requirements Analysis with Increasing Solar Generation in the ERCOT Interconnection. In *2021 IEEE Power & Energy Society General Meeting (PESGM)* (pp. 1-5). IEEE.

SKILLS

Programming Languages: C, C++, C#, Modelica, Python, Latex, Markdown.
Software Tools: OpenModelica, Dymola, MatLab, Octave, Simulink, Git, Docker, Travis-CI, GitHub, BitBucket, UPLAN Altos, Bash, Windows, Linux.
Power Systems Tools: PSS/E, PowerWorld, Modelica, ASPEN, dGen.
Languages: Fluent in English, Spanish, and French.
GitHub Profile: https://github.com/ManuelNvro
Personal Website: https://manuelnvro.github.io/Manuel-Navarro-Catalan/