Juan Pablo Noreña M

Graduate Student, M.Sc. Electrical Engineering, UNALMED

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Education

Universidad Nacional de Colombia Sede Medellín, Facultad de Minas, Depto. de Energía Eléctrica y Automática
Bachelor, Electrical Engineering — *First Term '15 - Second Term '19*
GPA: 4.3/5 (Overall)

Universidad Nacional de Colombia Sede Medellín, Facultad de Minas, Depto. de Energía Eléctrica y Automática
M.Sc., Electrical Engineering — *First Term '20 - Second Term '21 (Expected)*
Dissertation proposal: PMU Digital Twins for Application in Power System Control Centers
Supervisor: Prof. Ernesto Pérez González

Employment Experience

Junior Researcher - Laboratory of Real-Time Systems for the research groups *Grupo de Automática de la Universidad Nacional de Colombia* (GAUNAL) and *Programa de Investigación Sobre Adquisición y Análisis de Señales* (PAAS-UN) working on R&D projects.
Dedication: 48 hours weekly — *January '18 - Present*

Research Interests

Real-time Cosimulation, Real-time Control and Supervision of Large Dynamic Systems, Applied Mathematics for Dynamic Systems.

Research & Development

UNPowerEstimator: Library for Power System State Estimation
Supervisor: Prof. Jairo Espinosa Oviedo — *February '18 - Junuary '19*

- .NET Framework Class Library oriented to power system state estimation including CIM standard files processing and linear and non-linear state estimation algorithms.
- Including GPA - Project Alpha adapters for the phasor data concentrator.
- In association with the colombian national power system network operator XM the project was tested and validated on Sabanalarga substation with a view to escalate the project to the colombian national interconnected system.

eGridStorm: Storm Tracking for Minimization of Risk in Power System Operation Based on Real-Time Lighting Information
Supervisor: Prof. Ernesto Pérez González — *May '18 - February '19*

- Development of a software with tools that allows to take real-time decisions minimizing the risk over a power system operation based on thunderstorm following, grouping and processing.
- A web service using the Keraunos lighting information system to show a risk index calculation in real-time for transmission lines operation.
- Funded by Colciencias.

Real-Time Cosimulation Laboratory for the Scientific Ecosystem "Energética 2030"
Supervisor: Prof. Ernesto Pérez González — *February '19 - Present*

- Development and implementation of cosimulation laboratory as a service for the scientific ecosystem, that allows to perform real-time simulation of multi-domain systems including the penetration of distributed energy resources.
- Also participate XM, Internexa and FEIN Aachen e.V.
- Funded by Colciencias.

Intelligent Traffic Lights Programming Recommender Based on Real-Time Information

Supervisor: Prof. Jairo Espinosa Oviedo *July '19 - March '20*

- Development of a software that combines AI and model based optimization, capable of finding the current traffic regime, based of patterns in the movility, and dynamically suggest the most convenient green times plan.
- In association with Secretaría de Movilidad de Medellín.

Conference Publications

J. Noreña et al., "Optimal Assignment of Resources for Distributed Computing in Real-Time Applications," 2019 4th IEEE Colombian Conference on Automatic Control (CCAC).

J. Noreña et al., "A software-in-the-loop testbed platform implementation for new PMU-based wide area control strategies for future system operation," 2020 48th CIGRE Paris Session.

J. Noreña et al., "Online risk assessment of power system transmission lines based on multivariate analysis of lightning and weather data," 2020 48th CIGRE Paris Session.

Awards & Achievements

- Exempt from paying tuition the first 2 year of the undergrad. program (Best overall GPA by program).

Computer Skills

Languages:

- C / C++ [6/10]
- C# / .NET Framework [7/10]
- Python [8/10]

Simulation tools:

- PowerFactory [4/10]
- OpenModelica [5/10]
- Matlab/Simulink [5/10]
- RT-LAB suite [6/10]
- DPsim [7/10]

Other tools:

- RTOS (Linux PREEMP_RT) [5/10]
- openHistorian2 [7/10]
- InfluxDB & Grafana [6/10]
- ELK Stack [4/10]
- DevOps (Git, Vagrant & Ansible) [7/10]
- VILLASnode Framework [7/10]

Other Information

Languages:

- Native Spanish.
- Advanced English.
- Basic French.