Edward Arthur **Quarm Jnr.**

Optimization · Control Systems · Machine Learning Enthusiast

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Summary

Computational data scientist with 3 years of experience in implementing optimization algorithms in energy systems, control systems and machine learning applications. Motivated to take-up new challenges in my career.

Work Experience

University of Texas at Arlington

Texas, USA

Teaching & Research Assistant — *Jan. 2017 - PRESENT*

- Modeled power system optimization problem of minimizing operation cost subject to technological constraints while considering uncertainty in problem formulation in MATLAB CVX framework.
- Reformulated the Mixed-Integer Program (MIP) by applying convex relaxations which make formulations scalable and tractable to be solved by MOSEK interior point solver.
- The proposed convex relaxation was able to tackle the MIP problem with 12,000 binary variables and 2 million continuous variables in 35 minutes at an average gap of 0.05% from global optimality.
- Assisted 60 undergraduate students in various course modules in “Continuous and Discrete Systems” .

Enstoa Inc.

Dallas, Texas

Machine & Deep Learning Intern — *June 2019 - Aug. 2019*

- Contributed to developing robust constraints for an MIP algorithm to optimize project scheduling for clients in the construction industry while maximizing profits
- Reviewed python code on training image detection convoluted neural network (CNN) to identify objects such as walls, windows, rooms etc. in 2D floor plans

Institute of Automatic Control, RWTH Aachen University

Aachen, GERMANY

Research Intern — *Jan. 2016 - July 2016*

- Modeled state-space model of a 4 MW wind turbine drive-train and test bench in MATLAB
- Applied optimization algorithms to develop an H-infinity controller to emulate eigen frequencies of the mechatronic system in MATLAB robust optimization toolbox
- Successfully tested the working H-infinity controller in Hardware-in-the-Loop (HIL) dSPACE setup

Education

The University of Texas at Arlington

Texas, USA

Ph.D Electrical Engineering — *May 2017 - PRESENT*

Research Focus: Massively Scalable Computational Methods for Power System Scheduling
Advisor: Dr. Ramtin Madani

Université Grenoble Alpes

Grenoble, FRANCE

Msc. Systems Control and Information Technology — *Sept. 2015 - Nov. 2016*

Thesis Topic: Robust Multivariable Control of a Hardware-In-the-Loop (HIL) simulation for a 4 MW system test bench for wind turbines
Advisor: Dr. Uwe Jassmann

Kwame Nkrumah University of Science and Technology (KNUST)

Kumasi, GHANA

Bsc. Electrical & Electronic Engineering — *Sept. 2009 - July 2013*

Thesis Topic: Electrical Impact Analysis of Grid-Connected Solar PV Systems on Distribution Grids - A Penetration level Study
Advisor: Dr. Emmanuel K. Anto

Publications

- **E. Quarm Jnr** and R. Madani, **"Microgrid Scheduling under Transient Load Uncertainty via Cone Programming Relaxation"** - In Preparation
- **E. Quarm Jnr** and R. Madani, **"Scalable Security-Constrained Unit Commitment under Uncertainty via Cone Programming Relaxation"** - Accepted for publication in next issue IEEE Transactions on Power Systems Journal
- **E. Quarm Jnr**, F. Zohrizadeh and R. Madani, **"A Scalable Computational Method for Security-constrained Unit Commitment with Energy Storage"** Abstract presented at INFORMS Annual Meeting, 2018
- F. Zohrizadeh, M. Kheirandishfard, **E. Quarm Jnr** and R. Madani, **"Penalized Parabolic Relaxation for Optimal Power Flow Problem"** 57th IEEE Conference on Decision and Control, 2018

Skills

Technical expertise

SQL, Python, PyTorch, C, Mathlab & Simulink, CPLEX, GUROBI, MOSEK, CVX framework, LaTeX

Natural Languages

English *(mother tongue)*, French *(full professional proficiency)* and German *(beginner)*

References

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Dr. Emmanuel Witrant

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