

# Charles Gulian

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## **ENERGY AND ENVIRONMENTAL ECONOMICS, INC.**

New York, NY

*Associate*

Mr. Gulian joined E3 in 2020 after completing a combined bachelor's/master's program in Applied Mathematics at Johns Hopkins University. He works primarily with the bulk grid group at E3. Mr. Gulian has worked with E3's RECAP and RESOLVE models to study resource adequacy for utilities in the Southwest U.S. and to develop U.S.-wide capacity expansion models. He takes an active role in developing E3's in-house models, expanding results visualization capabilities or formulating new capacity expansion models that better represent the value of long duration energy storage technologies. He has also developed machine learning-based tools to forecast demand for operating reserves in power markets. He has research experience in resource planning and has studied scenario-based transmission/generation expansion planning models using Pyomo, a Python optimization library. He interned at Con Edison Clean Energy Businesses in 2019, where he worked with their wholesale power trading team to develop price forecasting models and trading strategies based on ISO load forecasting errors.

## **CON EDISON CLEAN ENERGY BUSINESSES**

New York, NY

*Energy Analyst Intern*

Summer 2019

- Worked with trading desk to implement physical and financial inter-ISO power trading strategies
- Built random forest regression-based price forecasting algorithms for daily use on trading floor
- Analyzed price arbitrage opportunities in power markets due to ISO load forecasting errors

## **JOHN HOPKINS UNIVERSITY OFFICE OF SUSTAINABILITY**

Baltimore, MD

*Graduate Student Instructor*

Fall Semester 2018

- Organized three successful events to promote sustainability on Johns Hopkins University's campus, including a "sustainable cider + trivia" event and a campus-wide networking event for sustainability-related student groups

*Teaching Assistant for Discrete Mathematics*

Fall Semester 2018

- Designed and delivered a weekly lesson plan to a class section of 25 students
- Proctored exams and graded weekly homework assignments

## **SELF EMPLOYED**

Fall 2016-Present

*Tutor for Mathematics and Physics*

- Worked one-on-one with Baltimore high school students in various math/physics subjects

## Extracurricular Work Experience

### **INSTITUTE FOR RESEARCH TECHNOLOGY (IIT)**

*Research Associate*

Madrid, Spain  
Summer 2018-Present

- Wrote transmission/generation expansion planning models in Python to test a suite of optimization techniques for power grid planning under uncertainty in future wind power availability
- Studied representative day selection via k-means clustering of historical demand/production data

### **INSTITUTE FOR DATA INTENSIVE ENGINEERING AND SCIENCE**

*Research Assistant*

Baltimore, MD  
Summer 2016-Spring 2018

- Published in Astronomy and Computing: “Robust Statistics for Image Deconvolution”
- Implemented a deconvolution algorithm to iteratively deblur astronomical images
- Created “update cooling” technique to ensure convergence of the image processing algorithm

## Education

The Johns Hopkins University

*Combined Bachelor/Master of Science, Applied Mathematics & Statistics*

Baltimore, MD

December 2019

## Citizenship

United States