

Stefanos Baros

<http://stefanosbaros.com/> | <https://github.com/stefanosbaros>

SUMMARY

I have a strong technical background in *energy markets, machine learning, probability and statistics, optimization and automatic control*. I have demonstrable experience in *data analytics, modeling and trading* within the energy commodities space. Over the years, I developed machine-learning-based models for load forecasting, generation forecasting and price spread prediction and systematic algorithms for virtual and point-to-point congestion trading in ERCOT and ISO NE markets. Some of the tools I have used in this context are machine learning (ML) methods including regression, random forests, gradient boosting trees, logistic regression and time-series forecasting, implemented in Python.

My academic work has been marked by excellence, I have earned numerous awards, recognition and accolades. In my so-far career in the energy trading space, I developed algorithms that generated multi-million dollar profits. My aspiration as a trader is to leverage both *machine-learning algorithms and fundamentals* and develop systematic trading algorithms that *generate consistent high profits* over time.

WORK EXPERIENCE

DV Trading

Energy Trader

Boston, MA

January 2022 - Present

Trading virtuals in ERCOT, ISONE and PJM.

Boston Energy Trading and Marketing (BETM)

Trading Analyst (Virtual Trading and Short-term Congestion Trading)

Boston, MA

September 2021 - October 2022

Developed several forecasting models, identified trading signals and co-developed (with another trader) multiple trading algorithms for virtual trading and point-to-point congestion trading that generated \$3M total yearly PNL in 2022.

ACADEMIC AND RESEARCH EXPERIENCE

National Renewable Energy Laboratory (NREL)

Researcher, Energy Markets, Control, Optimization and Machine Learning

Golden, CO

October 2019 - September 2021

Massachusetts Institute of Technology (MIT)

Postdoctoral Research Associate, MIT Energy Initiative

Cambridge, MA

August 2018 – July 2019

Massachusetts Institute of Technology (MIT)

Postdoctoral Research Associate, Department of Mechanical Engineering

Cambridge, MA

June 2016 – June 2018

EDUCATION

Carnegie Mellon University, USA

Ph.D. in Electrical and Computer Engineering

May 2016

GPA: 4.0/4.0

Carnegie Mellon University, USA

M.Sc. in Electrical and Computer Engineering

December 2012

GPA: 4.0/4.0

National Technical University of Athens, Greece

Diploma (5y) in Electrical and Computer Engineering.

June 2011

GPA: 9.18/10.0 (*Summa Cum Laude*, top 3%)

RELEVANT SKILLS

- **Analytical skills:** machine learning, probability and statistics, optimization, energy markets, energy economics.
- **Programming:** Python (SciKit-learn, NumPy, SciPy, Pandas), SQL, Matlab.
- **Other software:** Powerworld (OPF), Panorama.
- **Languages:** English (fluent), Greek (native).

INTERNSHIP/CONSULTING EXPERIENCE

Smart Wires Inc.

Product and Solution Analytics Team

Consultant

Union City, CA

September 2019 - October 2019

General Electric (GE)

Energy Management Group

Graduate Research Intern

Schenectady, NY

May 2014 - August 2014

RESEARCH IN ENERGY MARKETS, MACHINE LEARNING AND DATA ANALYTICS

National Renewable Energy Laboratory, Denver, CO
Research Scientist

Energy Systems Control and Optimization Group
October 2019 - September 2021

- **Developed machine learning algorithms for load forecasting and energy market price prediction:** used regression and time-series analysis to develop models for predicting electricity consumption and wholesale market prices based on historic data and other features.
- **Developed data-based methods for optimal control of systems with unknown models.**

Massachusetts Institute of Technology, Cambridge, MA
Postdoctoral Research Associate

Dept. of Mechanical Engineering & MIT Energy Initiative
June 2016 - July 2019

- **Design of dynamic mechanisms for electricity markets using distributed optimization:** introduced new mechanisms for the real-time wholesale energy market and the regulation market at the transmission level, as well as, for the retail market at the distribution level, that lead to improved economic efficiency.

[Relevant publications]

A. M. Annaswamy, S. Baros, "A Dynamic Framework for Electricity Markets", In: *Meyn S., Samad T., Hiskens I., Stoustrup J. (eds), Energy Markets and Responsive Grids, The IMA Volumes in Mathematics and its Applications, vol 162. Springer, New York, NY, 2018.*

R. Haider, S. Baros, Yasuaki Wasa, J. Romvary, Kenko Uchida, A. M. Annaswamy, "Toward a Retail Market for Distribution Grids," *IEEE Transactions on Smart Grid. Vol. 11, Issue:6, pp: 4891-4905, Nov. 2020.*

Carnegie Mellon University, Pittsburgh, PA
Graduate Research Assistant

Dept. of Electrical and Computer Engineering
September 2012 - May 2016

- **Developed algorithms for control of next-generation energy systems with renewables and energy storage.**

[Relevant publications]

S. Baros, M. Ilić, "Distributed Torque Control of Deloaded Wind DFIGs for Wind Farm Power Output Regulation," *IEEE Transactions on Power Systems, Vol. 32, Issue:6, pp: 4590-4599, Nov. 2017.*

S. Baros, M. Ilić, "A Consensus Approach to Real-time Distributed Control of Energy Storage Systems in Wind Farms," *IEEE Transactions on Smart Grid, Vol. 10, Issue: 1, pp: 613-625, Jan. 2019*

ACADEMIC HONORS, AWARDS AND RECOGNITION

- Energy Systems Best Paper Award from the American Society of Mechanical Engineers (ASME) 2016
- A.G Leventis Foundation scholarship for graduate studies 2014-16
- ATK/Nick G. Vlahakis Graduate Fellowship (CMU) for outstanding academic performance 2012
- Alexander S.Onassis Foundation scholarship for graduate studies 2012-14
- Makarios Scholarship/Theodore and Wally Lappas Award for outstanding academic performance 2012
- Carnegie Institute of Technology Dean's Fellowship (CMU) 2012
- Fulbright scholarship for graduate studies in USA 2011
- Grigorios Farakos award for ranking first among all ECE and MechE students of NTUA with major energy 2010
- Scholarship from the State Scholarships foundation of Greece for outstanding academic performance 2006-2011
- Bronze medal in a Regional Mathematical Olympiad, Cyprus 2004