

# VLADIMIR DVORKIN

Postdoctoral Fellow at the Massachusetts Institute of Technology

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## CONTRIBUTIONS

### Working papers

V. Dvorkin, A. Botterud, D. Mallapragada, "Multi-Stage Investment Decision Rules for Power Systems with Performance Guarantees,"

In preparation for the submission to the IEEE Transactions on Power Systems

V. Dvorkin, F. Fioretto, P. Van Hentenryck, J. Kazempour, P. Pinson, "Differentially Private Convex Optimization with Feasibility Guarantees,"

Submitted to the 34th Conference on Neural Information Processing Systems (NeurIPS)

V. Dvorkin, J. Kazempour, P. Pinson, "Spiteful Bidding in Electricity Markets,"

Available upon request

### Published papers

V. Dvorkin, D. Mallapragada, A. Botterud, J. Kazempour, P. Pinson, "Multi-Stage Linear Decision Rules for Stochastic Control of Natural Gas Networks with Linepack," XXII Power Systems Computational Conference, 2022

V. Dvorkin, A. Ratha, J. Kazempour, P. Pinson, "Stochastic Control and Pricing for Natural Gas Networks," IEEE Transactions on Control of Network Systems, 2021

V. Dvorkin, F. Fioretto, P. Van Hentenryck, J. Kazempour, P. Pinson, "Differentially Private Optimal Power Flow for Distribution Grids," IEEE Transactions on Power Systems, 2020

V. Dvorkin, P. Van Hentenryck, J. Kazempour, P. Pinson, "Differentially Private Distributed Optimal Power Flow," In: 59th Conference on Decision and Control, 2020

V. Dvorkin, J. Kazempour, P. Pinson, "Chance-Constrained Equilibrium in Electricity Markets With Asymmetric Forecasts," In: 16th International Conference on Probabilistic Methods Applied to Power Systems (PMAPS), 2020

V. Dvorkin, S. Delikaraoglou, J.M. Morales, "Setting Reserve Requirements to Approximate the Efficiency of the Stochastic Dispatch," IEEE Transactions on Power Systems, 2019.

V. Dvorkin, J. Kazempour, P. Pinson. "Electricity Market Equilibrium under Information Asymmetry." Operations Research Letters, 2019

A.M. Radoszynski, V. Dvorkin, P. Pinson, "Accommodating Bounded Rationality in Pricing Demand Response," In: 2019 IEEE Milan PowerTech. IEEE, 2019

V. Dvorkin, J. Kazempour, L. Baringo, P. Pinson, "A Consensus-ADMM Approach for Strategic Generation Investment in Electricity Markets," In: IEEE 57th Annual Conference on Decision and Control (CDC), 2018

## WORK EXPERIENCE

### Postdoctoral Fellow (previously Associate)

Massachusetts Institute of Technology Feb 2021 – Present Cambridge, MA

- MIT Energy Initiative and Laboratory for Information & Decision Systems
- Supervised by Audun Botterud and Dharik Mallapragada
- Energy research at the interface of optimization and machine learning

### Visiting Scholar

Georgia Institute of Technology Jul 2019 – Dec 2019 Atlanta, GA

- School of Industrial and Systems Engineering (ISyE)
- Supervised by Pascal Van Hentenryck
- Development of differentially private optimization algorithms for energy applications

### Research Assistant

Higher School of Economics Dec 2013 - Aug 2017 Moscow, Russia

- Institute of Pricing & Regulation of Natural Monopolies
- Supervised by Iliya Dolmatov
- Project work in electricity, gas & heat markets

### Consultant

Khaznah Strategies Ltd. May 2017 - Aug 2017 London, UK

- Energy and natural resources price forecasting
- Software Engineering

### Engineering Intern

Power Engineering Group EOL Sep 2011 - Nov 2013 Moscow, Russia

- Designing high-voltage circuits for consumer electronics
- Developing the high-voltage devices for mass production.

## EDUCATION

### Ph.D. in Electrical Engineering

Technical University of Denmark (DTU)  
Sep 2017 – Dec 2020 Denmark, Lyngby

- Project title: Stochastic and Private Energy System Optimization
- Supervised by Prof. Pierre Pinson and Prof. Jalal Kazempour

### M.Sc. in Sustainable Energy

Technical University of Denmark (DTU)  
Aug 2015 – Jun 2017 Denmark, Lyngby

- Primaries: power systems stability & control, optimization, decision-making, game theory, energy economics&policy

### M.Sc. in Energy Economics

Higher School of Economics (HSE)  
Sep 2012 – Jun 2014 Russia, Moscow

- Primaries: microeconomics, finance, fundamentals of energy economics, corporate management

### B.E. in Electrical Engineering

Moscow Power Engineering Institute (MPEI)  
Sep 2008 – Jun 2012 Russia, Moscow

- Primaries: power systems control, planning & optimization

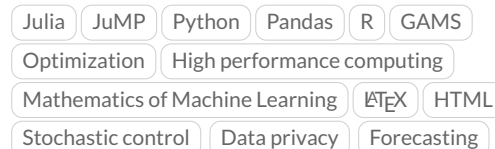
## LANGUAGES

Russian

English



## SKILLS



## SCHOLARSHIPS & AWARDS

Marie Skłodowska-Curie Actions – COFUND (Iberdrola) Individual Postdoc Fellowship (link)

Jan 2022–Dec 2023

Best Paper Award, IEEE Trans. Power Syst.

2021

Outstanding Reviewer, IEEE Trans. Power Syst.

2021

LANL Grid Science Winter School Scholarship

Jan 2019

Outstanding Reviewer, IEEE Trans. Sustain. Energy

2018

DTU Tuition Fee Waiver for MSc Students

Aug 2015 - Jun 2017

HSE Scholarship for Science Achievements

March 2014

HSE Scholarship for Excellency

Sep 2012- Jun 2014

Semifinalist (10/300) at the Youth Russian Petroleum&Gas case championship

Jun 2013

MPEI Scholarship for Academic Achievements

Sep 2008 - Dec 2012

## PRESENTATIONS

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### Privacy-preserving perturbations of convex optimization problems

- 📍 MIT LIDS & Stats Tea Talk 📅 May 2022
- 📍 MIT Energy Initiative Research Meets 📅 May 2022

### Multi-Stage Stochastic Generation Investment with Performance Guarantees

- 📍 Federal Energy Regulatory Commission Workshop 📅 Jun 2021
- 📍 2021 INFORMS Annual Meeting 📅 Oct 2021
- 📍 MITEI Future Energy Systems Center Fall Workshop 📅 Dec 2021

### Stochastic Control and Market Design for Natural Gas Networks

- 📍 Massachusetts Institute of Technology 📅 Sep 2020
- 📍 2020 INFORMS Annual Meeting 📅 Oct 2020

### Differentially Private Optimization of Power Systems

- 📍 2020 INFORMS Annual Meeting 📅 Oct 2020
- 📍 2019 Energy Systems and Optimization Workshop 📅 Nov 2019
- 📍 ISyE Student Seminars 📅 Dec 2019

### Electricity Market Equilibrium under Information Asymmetry

- 📍 2019 INFORMS Annual Meeting 📅 Oct 2019
- 📍 2019 IEEE PES General Meeting 📅 Aug 2019
- 📍 XV International Conference on Stochastic Programming (ICSP2019) 📅 Aug 2019
- 📍 Grid Science Winter School, Los Alamos National Laboratory 📅 Jan 2019
- 📍 Johns Hopkins University 📅 Jan 2019

### A Consensus-ADMM Approach for Strategic Generation Investments

- 📍 2018 IEEE Conference on Decision and Control (CDC) 📅 Dec 2018
- 📍 Computational Management Science (CMS) Conference 2018 📅 May 2018

## TEACHING EXPERIENCE

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### Renewables in Electricity Markets

- 📊 M.Sc. 📅 Spring 2020 📍 Technical University of Denmark
- 📊 M.Sc. 📅 Spring 2017 📍 Technical University of Denmark

### DTU Summer School on Energy Optimization, Learning and Game Theory

- 📊 M.Sc./Ph.D. 📅 2017-2019 📍 Technical University of Denmark

### Advanced Optimization in Electricity Markets

- 📊 M.Sc./Ph.D. 📅 Fall 2018 📍 Technical University of Denmark

### Decomposition Techniques for Energy Systems Applications

- 📊 M.Sc./Ph.D. 📅 Fall 2018 📍 Skolkovo Institute of Science and Technology

## SUPERVISION EXPERIENCE

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### Co-Optimization of Green Hydrogen and Power System Expansion Planning

- 👤 Greta Marija Nikkare 📊 M.Sc. thesis 📅 Spring 2022

### Power Systems Operation and Planning Using Chance-Constrained Programming

- 👤 Rafal Michal Mikulowski 📊 Coursework 📅 Fall 2019

### Demand Response and Bounded Rationality in Electricity Markets

- 👤 Andrea Marin Radoszynski 📊 M.Sc. thesis 📅 Spring 2018

### Stochastic Equilibrium Models for Capacity Investment in Energy Systems

- 👤 Eirini Ioanna Barmpati 📊 Coursework 📅 Fall 2017

## REVIEWER SERVICE

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- 📖 Computational Management Science 📅 Since Mar 2022
- 📖 European Journal of Operational Research 📅 Since Jan 2020
- 📖 IEEE Transactions on Smart Grids 📅 Since Apr 2019
- 📖 IEEE Transactions on Automatic Control 📅 Since Jan 2019
- 📖 IEEE Transactions on Sustainable Energy 📅 Since Jun 2018
- 📖 IEEE Transactions on Power Systems 📅 Since Mar 2018
- 📖 International Transactions on Electrical Energy Systems 📅 Since Oct 2017
- 👤 IEEE Power Systems Computation Conference 📅 2018,2020, 2022
- 👤 IEEE Conference on Decision and Control 📅 2018-2020
- 👤 Smart Energy Systems and Technologies (SEST) 📅 2020
- 👤 IEEE PES PowerTech 📅 2019
- 👤 IEEE American Control Conference 📅 2018