Anubhav Ratha, Ph.D.

anubhav.rath@gmail.com | Copenhagen, Denmark | anubhavratha.github.io
anubhavratha | Google Scholar | anubhavratha | @anubhavratha

Career Highlights

- **Industry:** At Vestas, developed algorithms for operational value optimization of hybrid power plants; implemented strategies for risk-aware participation in ancillary service markets.
- **Startup:** After M.Sc. from ETH Zurich, cofounded Shared Electric, a startup building demand response solutions to accelerate the clean energy transition in Europe and India.
- **Research:** At DTU, developed novel market mechanisms and products for energy systems (electricity and gas) using tools from optimization, game theory, control systems, and statistics.
- **Key skills:** R&D, energy markets, forecasting, product management, and software development. Beyond technology, also adept at persuasive communication by breaking down complex scientific topics and at mentoring and inspiring colleagues.

Work Experience

Vestas Wind Systems *Aarhus, Denmark*

Plant Optimization Specialist, Modeling & Analytics R&D Division *09/2024 - 06/2025*

- Led the implementation of risk-aware scheduling algorithms for value-optimal operation of wind and wind-based hybrid energy assets in various energy markets: day-ahead, intra-day, and ancillary services
- Led R&D projects to develop value engineering tools to optimally site, size, and operate wind and wind-based hybrid power plants around the world

Data Scientist, Modeling & Analytics R&D Division *06/2022 - 08/2024*

- Developed new algorithms for control and optimal operation to maximize value of energy for hybrid power plants with complex Power-to-X assets, battery energy storage systems, and exposure to multiple revenue streams
- Led intellectual property generation efforts as inventor in two utility patent applications, delivered several internal analysis on capture price dynamics for wind energy operating in merchant markets

General Electric (GE) Power *Bangalore, India*

Lead Analyst - Automation & Controls *12/2016 - 09/2018*

- Worked with R&D, product management, engineering, and legal teams to help shape GE's industrial internet strategy
- Delivered intellectual property and competitive analysis, licensing and monetization advice on Industry 4.0 in the domains of industrial app store, edge-cloud computing, and predictive control

Shared Electric GmbH *Zurich, Switzerland*

Co-Founder & CTO *12/2013 - 11/2016*

- Led an international energy startup in Switzerland, Denmark, and India, working closely with utilities and policymakers
- Conceived, developed, and ran a demonstrator project for *Engaze*, a product to uncover demand-side flexibility for European utilities
- Prototyped and deployed a cloud-based monitoring solution for Indian residential PV early adopters (prosumers) providing data-driven insights for asset performance management

Education

Technical University of Denmark (DTU) *Kgs. Lyngby, Denmark*

Ph.D. in Electrical Engineering *12/2018 - 03/2022*

- Advisors: Prof. Pierre Pinson and Prof. Jalal Kazempour (DTU). Co-advisor: Ana Virag (VITO)
- Thesis title: *Market design for integrated energy systems of the future*

Swiss Federal Institute of Technology (ETH), Zürich *Zurich, Switzerland*

M.Sc. in Energy Science and Technology *09/2011 - 08/2013*

- Study Advisor: Prof. Göran Andersson
- Thesis title: *Optimal wind power plant bidding under consideration of storage*

National Institute of Technology (NIT), Rourkela *Rourkela, India*

B.Tech. in Electrical Engineering *06/2007 - 05/2011*

- Study Advisor: Prof. Susmita Das

Professional Development

Short-term Courses

1. Professional courses on systems engineering, design thinking, product architecture for complex products, and modular product development.
2. Leadership courses focused on leading technology projects and teams in dynamic environments, e.g., situational leadership, specialist (mid-senior level) leadership.
3. Ph.D.-level courses on energy markets, forecasting, advanced optimization techniques, game theory, and equilibrium modeling.
4. Professional courses on licensing, monetization, technology transfer, and intellectual property.
5. Workshops on global business management, content marketing, growth hacking, communication and pitch training, sales, and fundraising by experts from HBS, MIT, INSEAD, and Singularity University.

Awards, Fellowships, and Grants

2018 **Ph.D. Research Fellowship**, Flemish Institute of Technological Research (VITO), Belgium

2015-2016 **Next Step Challenge Startup Finalist**, Next Step Challenge, a part of Scale Up Denmark
EIT Climate-KIC Startup Award, EIT Knowledge and Innovation Community (KIC)
Venture Kick (Stage 1 and 2), Venture Kick, Switzerland

2011 **Swiss Government Excellence Scholarship**, Full tuition Fee Waiver and monthly stipend during M.Sc. studies, awarded by Federal Commission for Scholarships for Foreign Students (FCS), Switzerland

Teaching and Supervision

Teaching Experience

Nov 2024	**Optimization in practice: Overcoming uncertainty**, Guest lecturer (1.5-hour module) for a DTU M.Sc. course: *Optimization in Modern Power Systems*	*DTU*
Sep 2024	**Feasibility studies for renewable energy projects**, Guest lecturer (3-hour module) for a DANIDA-sponsored DTU professional course: *Physical and Financial Power Markets*	*DTU*
Spring 2019	**Advanced optimization and game theory for energy systems course**, Guest lecturer (2-hour module) and Teaching Assistant at DTU Ph.D. course	*DTU*
Spring 2019	**General electrical engineering**, Guest lecturer (1-hour module), Teaching Assistant for DTU B.Sc. course	*DTU*

Supervision

1. Jimmy Brossier, *Study of offtake structures and RFNBOs in renewable Power-to-X plants*
   M.Sc. Thesis. Spring 2024, DTU

2. Rune Larsen, *Hybridization as a tool for firm in-feed from wind power plants*
   M.Sc. Thesis. Spring 2024, DTU
3. Louis Hubert, *On the reduction of gas network modeling error in coordinated electricity and gas markets*
   M.Sc. Thesis. Spring 2020, DTU (Visiting student from University of Mons, Belgium)
4. Alvaro Coll Martinez, *Coordination of power and natural gas systems under uncertainty*
   M.Sc. Thesis. Spring 2019, DTU

Pedagogical Training

Spring 2019 **Teaching and Learning Module 1**, DTU LearningLab

Publications

Working Papers

1. **A. Ratha**, P. Pinson, H. Le Cadre, and J. Kazempour. Statistical learning in strategic environments.
2. Y. Werner, **A. Ratha**, and J. Kazempour. Network-aware procurement of reserves in electricity markets.

Under Review

1. T. Falconer, **A. Ratha**, J. Kazempour, P. Pinson, and M. Kamgarpour, 2025. Selling information in games with externalities. Submitted to *Management Science*. ArXiv:

Journal Publications

1. **A. Ratha**, P. Pinson, H. Le Cadre, A. Virag, and J. Kazempour, 2023. Moving from linear to conic markets for electricity. *European Journal of Operational Research (EJOR)*, 309(2), pp.762-783.
2. V. Dvorkin, **A. Ratha**, P. Pinson, and J. Kazempour, 2022. Stochastic control and pricing for natural gas networks. *IEEE Transactions on Control of Network Systems*, 9(1): pp.450-462.
3. **A. Ratha**, A. Schwele, J. Kazempour, P. Pinson, S. Shariat Torbaghan, and A. Virag, 2020. Affine policies for flexibility provision by natural gas networks to power systems. *Electric Power Systems Research*, 189: p.106565.

Conference Publications (Peer-Reviewed)

1. J. Brossier, L. Mitridati, **A. Ratha**, and T.V. Jensen, 2025. Role of flexible contract design in unlocking Power-to-X projects. In *2025 21st European Energy Market (EEM) Conference, Lisbon, Portugal*. 27-29 May 2025.
2. **A. Ratha**, J. Kazempour, A. Virag, and P. Pinson, 2019. Exploring Market Properties of Policy-based reserve procurement for power systems. In *2019 58th IEEE Conference on Decision and Control (CDC), Nice, France*, pp.7498-7505.
3. T.W. Haring, M.A. Bucher, **A. Ratha**, and G. Andersson, 2015. On wind farm operation with third-party storage. In *2015 IEEE Power and Energy Society General Meeting, Denver, CO, USA*, pp.1-5.
   🏆 Shortlisted and presented in Best Paper Award Session at the General Meeting
4. **A. Ratha**, E. Iggland, and G. Andersson, 2013. Value of lost load: How much is supply security worth? In *2013 IEEE Power and Energy Society General Meeting, Vancouver, BC, Canada*, pp.1-5.

Thesis

1. A. Ratha, 2022. Market design for integrated energy systems of the future. *Ph.D. Thesis.* Technical University of Denmark (Supervised by P. Pinson, J. Kazempour, and A. Virag. Examined by S. Chatzivasileiadis, M.F. Anjos, A. Street)
   Thesis: . Slides:
2. A. Ratha, 2013. Optimal wind power plant bidding under consideration of storage. *M.Sc. Thesis.* ETH Zürich (Supervised by T.W. Haring and M.A. Bucher. Examined by G. Andersson)
   Thesis:

Invited Papers and Technical Blogs (Non-Peer Reviewed)

1. **A. Ratha**, 2025. Are electricity markets fit for purpose? Part I - V. In *Clean Energy For Billions.*
2. **A. Ratha**, 2025. Climate change & AI-hooked society: A compatibility check. In *Clean Energy For Billions.*
3. A. Virag, K. Kessels, and **A. Ratha**, 2021. Smart energy system integration: Towards market-enabled clean and coordinated energy sectors. In Expert Talks, EnergyVille, Belgium.
4. **A. Ratha**, 2016. UDAY scheme: Moving India's distribution companies (DISCOMs) to an innovative future? In *Clean Energy For Billions.* (personal blog)
5. **A. Ratha**, 2016. Demistying UDAY: Impacts on key stakeholders. In *Clean Energy For Billions.*
6. **A. Ratha**, 2013. India's blackouts of 2012: What happened and why? In *ESI Bulletin on Energy Trends and Development*, 5(4), pp.3-6.

Presentations

Conferences and Workshops

1. *Market Design for Integrated Energy Systems of the Future*
   Ph.D. Defense
   Jun 2022. DTU, Denmark and Virtual event
2. *Stochastic control and pricing for natural gas networks*
   2020 INFORMS Annual Meeting
   Oct 2020. Virtual event
3. *Affine policies for flexibility provision by natural gas networks to power systems*
   Power System Computation Conference (PSCC).
   Jun 2020. Virtual event
4. *Markets for policy-based reserves in power systems*
   58th IEEE Conference on Decision and Control (CDC)
   Dec 2019. Nice, France
5. *Affine policies for coordination of power and natural gas systems*
   2019 INFORMS Annual Meeting.
   Oct 2019. Seattle, United States
6. *On control-based flexibility provision in electricity markets*
   EPFL-DTU Joint Workshop
   Sep 2019. EPF Lausanne, Switzerland
7. *Exploring market properties of policy-based reserve procurement for power systems*
   XV International Conference on Stochastic Programming
   Jul 2019. NTNU, Trondheim
8. *Evaluation of market properties of policy-based mechanisms for energy markets*
   Multi-Energy Workshop
   Mar 2019. ETH Zurich, Switzerland

Invited Talks and Panels

1. Panelist: *Towards Liberalized and Green Power Markets*.
   DANIDA-sponsored DTU professional course: *Physical and Financial Power Markets*
   Sep 2024. DTU, Denmark
2. Talk: *Statistical learning in electricity markets*
   May 2022. VITO, Belgium
3. Talk: *Stochastic control and pricing for natural gas networks*
   Mar 2022. VITO, Belgium
4. Talk: *Statistical learning and strategic behavior in electricity markets: A hands-on session*
   Nov 2021. DTU, Denmark
5. Talk: *Market design for future highly-interconnected multi-carrier energy systems*
   Mar 2019. VITO, Belgium