

Avinash N. Madavan

☎ 408-489-6680

✉ avinash.madavan@gmail.com

🌐 amadavan.github.io

🐙 amadavan

🌐 amadavan

EDUCATION

University of Illinois at Urbana-Champaign

2016 - 2022

M.S. in Electrical Engineering, 2018; Ph.D., 2022

University of California at San Diego

2012 - 2016

BS in Mechanical Engineering, Minor in Mathematics

Honors: Graduated *cum laude*, Phi Beta Kappa

WORK EXPERIENCE

Equinor

January 2024 - April 2025

Dankse Commodities

Senior FTR Analyst

- Designed and implemented a risk-aware portfolio optimization to provide an algorithmic bidding strategy.
- Developed statistical algorithms for model validation and verification.
- Evaluated and integrated model updates based on historical data and forecasts.

University of Illinois at Urbana-Champaign





August 2016 - December 2022

Electrical and Computer Engineering, Power and Energy Group

Graduate Research Assistant


- Research focused on online optimization for risk-sensitive convex optimization under uncertainty.
- Studied pricing mechanisms for transmission networks with uncertain component availability and wind.
- Derived convergence for a risk-sensitive primal-dual subgradient method with sampling complexity.
- Implemented open-source large-scale Benders' decomposition and critical region exploration algorithms for solving decomposed linear programs.
- Contributions were the basis of an NSF CAREER award.

PUBLICATIONS


- A. N. Madavan and S. Bose. A stochastic primal-dual method for optimization with conditional value at risk constraints. *Journal of Optimization Theory and Applications*, 190:428-460, 2021. 
- A. N. Madavan, N. Dahlin, S. Bose, and L. Tong. Risk-based hosting capacity analysis in distribution systems. *IEEE Transactions on Power Systems*, 2023. 
- A. N. Madavan, N. Dahlin, S. Bose, and L. Tong. Risk-sensitive security-constrained economic dispatch: Pricing and algorithm design. *IEEE Transactions on Power Systems*, 2023. (accepted). 
- M. Ndrio, A. N. Madavan, and S. Bose. Conditional-value-at-risk-sensitive locational marginal pricing for electricity markets. In *2021 IEEE Power & Energy Society General Meeting*. IEEE, 2021. 

PROJECTS

Stuka

Linear programming algorithms for large-scale optimization, with implementations of Benders' decomposition, critical region exploration, and a predictor-corrector interior point method. 

RSHC

Risk-sensitive hosting capacity to determine feasibility of and maximal solar integration in distribution networks. Leverages duality to efficiently and scalably determine the set of feasible integrations. 

SKILLS AND ACHIEVEMENTS

UIUC IEEE PES/PELS/IAS Chapter President

May 2019-August 2020

IEEE PECO Conference Co-Director

May 2019-May 2020

Core Knowledge

Control Theory, Optimization Theory, Operations Research, Statistical Analysis, Large-Scaled Networked Optimization, Risk-Sensitive Optimization, Power Systems

Programming Languages

Python, C/C++, Rust (sync), Java, MATLAB

Software Tools

IPOPT, Gurobi, MOSEK, CPLEX, TensorFlow, Pandas, Powerworld