# AVINASH MADAVAN

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## 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 - Present
*Dankse Commodities* *Senior FTR Analyst*

- Designed and implemented risk-aware portfolio optimization and bidding strategy.
- Developed programmatic routines 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' decompositon and critical region exploration algorithms for solving decomposed linear programs.
- Contributions were the basis of an NSF CAREER award.

**Equinor** Fall 2021
*Dankse Commodities* *FTR Intern*

- Implemented revised simplex and interior point methods to support FTR pricing analysis.
- Performed preliminary viability study for FTR trading in NYISO.
- Designed routines for computing nodal options prices for ERCOT.

## SELECTED 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. (submitted).
- 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.

## HONORS AND ACHIEVEMENTS

UIUC IEEE PES/PELS/IAS Chapter President May 2019-August 2020
IEEE PECI Conference Co-Director May 2019-May 2020
Best paper award at AIAA Infotech@Aerospace Conference 2015

## PROGRAMMING SKILLS

**Proficient** Python, C/C++, Rust (sync), Java, MATLAB
**Exposure** LaTeX, SQL, JavaSript, Angular, Node.js, PowerWorld