



Cornell University

Information, Systems, and Networks seminar

Towards Wind Farm Performance Optimization through Empirical Models

Rhodes Hall 310: April 19, 2013 @ 12:00PM



ISN Seminar Speaker:

Scott C. Evans

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Abstract

Wind Turbine performance measurement is hindered due to imprecision of nacelle anemometer measurements and the projection of these measurements into Annual Energy Production (AEP) estimates. This impedes optimization of wind farms by making it difficult to 1) show the benefit of upgrades to individual turbines, 2) jointly optimize wind turbine performance in a farm, and 3) validate the effects of optimization algorithms. In this paper we introduce a new paradigm for base lining wind turbine performance using multi-feature estimation based on empirical data and present a method for normalizing AEP uncertainty estimates that does not rely on nacelle anemometer estimates or expensive additional sensors. Future directions for whole farm optimizations are discussed.

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Biography

Scott C. Evans is an Electrical Engineer in the Machine Learning Lab at General Electric Research in Niskayuna, NY. Scott conducts research in machine learning and for information security and system optimization. He has over 25 patents in the area of algorithms, sequence analysis, cyber-security, and digital communications. Scott holds a PhD in Electrical Engineering from Rensselaer Polytechnic Institute, an MS in Electrical Engineering from the University of Connecticut and a BS in Electrical Engineering from Virginia Tech. Before joining General Electric Research, Scott served as a nuclear-trained Submarine Officer in the United States Navy.