

Rocky Mountain INFORMS: November 30, 2023

The Rocky Mountain INFORMS Chapter is pleased to host Professor Eduardo Pérez, who is an Associate Professor in Industrial Engineering at Texas State University. He was a Visiting Scholar in the NYU College of Global Public Health in 2019. He received his Ph.D. in Industrial and Systems Engineering from Texas A&M University in 2010 and his B.S. in Industrial Engineering from the University of Puerto Rico at Mayagüez, Puerto Rico in 2004. Dr. Pérez research interests are in the use of methodologies and theories of operations research, systems engineering and discrete-event simulation to solve problems in service systems. Some of his research project sponsors include the Department of Homeland Security, the National Science Foundation, the Robert Wood Johnson Foundation, and the Texas Department of State Health Services. Dr. Pérez is also the president of the Informs Minority Issues Forum.



Title A Simulation-driven Online Scheduling Algorithm for the Maintenance and Operation of Wind Farm Systems

Abstract Wind turbines experience stochastic loading due to seasonal variations in wind speed and direction. These harsh operational conditions lead to failures of wind turbines, which are difficult to predict. Consequently, it is challenging to schedule maintenance actions that will avoid failures. In this article, a simulation-driven online maintenance scheduling algorithm for wind farm operational planning is derived. Online scheduling is a suitable framework for this problem since it integrates data that evolve over time into the maintenance scheduling decisions. The computational study presented in this talk compares the performance of the simulation-driven online scheduling algorithm against two benchmark algorithms commonly used in practice: scheduled maintenance and condition-based monitoring maintenance. An existing discrete-event system specification simulation model was used to test and study the benefits of the proposed algorithm. The computational study demonstrates the importance of avoiding over-simplistic assumptions when making maintenance decisions for wind farms. For instance, most literature assumes maintenance lead times are constant. The computational results show that allowing lead times to be adjusted in an online fashion improves the performance of wind farm operations in terms of the number of turbine failures, availability capacity, and power generation.

Time and venue 6pm with snacks at 5:30pm. Colorado School of Mines campus, Brown Hall Room W475

Zoom Option Given on Next Page

anewman@mines.edu is inviting you to a scheduled Zoom meeting.

Topic: Perez-RMIC

Time: Nov 30, 2023 06:00 PM Mountain Time (US and Canada)

Join from PC, Mac, Linux, iOS or Android:

<https://mines.zoom.us/j/99975394100?pwd=S3lCTWYvQzUydDdHZ24zL0liQ2g3UT09>

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