

# Department of Systems Engineering and Engineering Management

## Seminar Series

### Performance Optimization of Wind Turbines

**Mr. Zijun ZHANG**

University of Iowa, USA

Date:	11 January, 2012 (Wed)
Time:	3:15pm (Tea reception at 3:00pm)
Venue:	B6619 (SEEM/MBE Conference Room)

#### **ABSTRACT**

Environmental concerns and sustainable living call for renewable energy solutions. Wind energy, as one of the major renewable energy resources, has experienced a rapid growth in the past decade. As a novel research area, wind energy has posted numerous research questions and improving the performance of wind turbines is the most important one. In this talk, a research of optimizing the wind turbine performance which ranges from control and monitoring of a wind turbine to scheduling a wind farm is introduced. As a wind turbine system involves mechanical, electrical and software components, modeling the wind turbine system is challenging. Recent advances in information technology have enabled acquisition of massive volumes of data which offers a valuable opportunity to develop accurate models of systems and processes. In this research, a data driven approach is applied to develop wind turbine models based on the industrial data of wind turbine conditions. To solve data driven models, computational intelligence approaches are utilized. The study of control and monitoring a wind turbine offers solutions to improving wind turbine efficiency and its life-cycle. In the research of scheduling a wind farm, minimizing the total cost of operating a wind farm is achieved based on the computed schedules.

### **About the Speaker**

**Zijun Zhang** is a PhD Candidate in the Department of Industrial Engineering at the University of Iowa. He received his B.S. (2008) in Systems Engineering and Engineering Management from the Chinese University of Hong Kong (Hong Kong), and his M.S. (2009) in industrial engineering from the University of Iowa. His research concentrates on data mining and computational intelligence applied to systems modeling, monitoring and optimization in wind energy, HVAC and wastewater processing domains.

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***All are welcome!***

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