Fangzhou (Leo) Sun

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Education

Ph.D. in Industrial and Systems Engineering (Operations Research) 2018(expected)
M.S. in Industrial and Systems Engineering (Manufacturing Systems Engineering) 2016
Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
- GPA: 3.91/4; Advisor: Dr. Subhash C. Sarin.

B.S. in Industrial Engineering 2013
Tongji University, Shanghai, China
- GPA: 4.64/5; Rank: 2/55
- Senior Thesis: *Scheduling of parallel machines with group maintenance considerations*

Research Interests

Operations research; Data analytics; Applied mathematical programming; Production scheduling and sequencing; Analyzing and designing algorithms for the control of logistics and production systems.

Research Experience

Advanced Biomass Feedstock Supply Chain Design, Blacksburg, VA 2015 – present
Funded by the Department of Energy, USA, the project aims at designing an advanced biomass feedstock supply chain from strategic, tactical, to operational level decision making.
- Formulated a math model for fleet management in the design of a switchgrass-based bio-ethanol supply chain.
- Developing effective solution approaches for the above math model.

Integrated Production and Shipping Scheduling Analysis, Blacksburg, VA 2014 – 2016
The project aims at developing effective solution approaches for integrated scheduling of production and distribution operations, and analyzing the benefits resulting from the integration.
- Formulated a mathematical model of the problem, and linearized the model, which is directly solvable by CPLEX.
- Developed an optimum-seeking algorithm and a fast heuristic, both exploiting structural properties of the problem.
- Made a contributed presentation (as first author) of the results at the 2015 INFORMS Annual Meeting, Philadelphia.

Simulation-Based Design of Panelized Residential Construction, Blacksburg, VA 2013 – 2014
The project is to analyze the entire process (panel design through worker assembly), and improve worker health and safety, construction efficiency via lean manufacturing, operations research, simulation, and ergonomic analysis.
- Conducted ergonomic experiments to collect pre-fabricated panels carrying data.
- Programmed the floor plan generation and the simulation on an ergonomic risk evaluation model.

Publications

Fangzhou Sun, Subhash C. Sarin, and Yuqiang Wang (to be submitted). *Integrated production and shipping scheduling for a single manufacturer and multiple customers*.
Fangzhou Sun and Subhash C. Sarin (in preparation). *A joint production and delivery schedule for a single vendor-buyer system over finite horizon*.
Rahul Ramachandran, **Fangzhou Sun**, Maichel M. Aguayo, and Subhash C. Sarin (in preparation). *A taxonomic review of biomass-biofuel supply chain problems*.

Selected Projects

Simulation Analysis of an Automated Material Handling System (AMHS) in a Semiconductor Fab fall 2014
- Built a simulation model (on AutoMod) of the AMHS of a 300mm wafer fab. Proposed a general coding structure for the simulation of complicated AMHS's which enabled flexible adjustment of task sequences of AGVs.

- Implemented and analyzed different scenarios (such as releasing and dispatching rules) to determine the best scenario based on cycle time and throughput. Analyzed the potential bottleneck of the AMHS.

Variation Analysis for Wafer Data Using Regression and Kriging Methods FALL 2013
- Built a linear regression model to predict wafer thickness. Performed the variable selection by using BIC.
- Also used Kriging method to model the wafer data. Compared the performance of Kriging and linear regression.

Music Management System Design SPRING 2012
- Designed the database structure. Coded the interface and the internal logic by C# and MS SQL Server.

Professional Experience

Graduate Teaching Assistant, **Virginia Tech,** Blacksburg, VA 2014 – 2016
- Courses instructed: Manufacturing Process Lab, Industrial Cost Control, Industrial Automation, Data Management.

Logistics Intern, **Shanghai Volkswagen Automotive,** Shanghai, China JUL 2012 – AUG 2012
- Inquired suppliers the delivery costs of purchased parts, and updated the information in database.
- Communicated with suppliers to implement a new Just-In-Time system, to reduce the outbound logistics cost.

Graduate Coursework

Operations Research: Linear Programming, Nonlinear Programming, Scheduling and Sequencing Theory, Integer Programming, Advanced Mathematical Programming, Dynamic Programming, Random Processes, Simulation.

Manufacturing Systems: Manufacturing Systems Engineering, Production Planning & Control, Lean Manufacturing, Semiconductor Manufacturing.

Statistics and Mathematics: Probability and Distribution Theory, Statistical Inference, Data Analytics, Real Analysis, Graph Theory.

Selected Honors & Awards

Graduate Student Assembly Travel Fund, *Virginia Tech*. 2015
Outstanding Graduate, Honors Student, *Tongji University*. 2011 – 2013
Provincial 1st Prize of Chinese Physics Olympiad, *Chinese Physics Society*. 2009

Memberships

Member of INFORMS SINCE 2015
Member of Alpha Pi Mu, a national industrial engineering honor society. SINCE 2014

Services

Reviewer for *Computers and Industrial Engineering*
Vice President of INFORMS VT Chapter 2015 – 2016

Computer Skills

Programming Languages: C++, C#, VB.
Optimization: CPLEX, AMPL.
Scientific Computing: R, Mathematica.
Database: MS SQL, MS Access.
Simulation: AutoMod, ProModel, Simio.
Others: AutoCAD, LaTeX.