Fangzhou Sun

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Objective

Full-time opprtunities in areas of operations research, industrial engineering, forecasting, and data analytics.

Summary

- Solid background in operations research, statistical modeling/analysis, and programming.
- Research/industry experience on optimal control of manufacturing/logistics/supply chains and revenue management.
- Over 5 hands-on projects in building optimization/simulation/statistics-based decision support tools.
- Energetic self-starter, outstanding analytical ability, and strong communication skills.

Education

Virginia Polytechnic Institute and State University (Virginia Tech), Blacksburg, VA
- Ph.D. in Operations Research (GPA: 3.92/4.00) Aug 2018 (expected)
  - Advisor: Dr. Subhash C. Sarin.
- M.S. in Industrial and Systems Engineering (GPA: 3.90/4.00) 2016

Tongji University, Shanghai, China
- B.E. in Industrial Engineering (GPA: 4.64/5.00; Rank: 2/55) 2013

Computer Skills

Programming Languages: C++, Python, VBA, C#.
Optimization: CPLEX/OPL, AMPL.
Scientific Computing: R, Mathematica.
Database: SQL, Access.
Simulation: AutoMod, ProModel, Simio.
Others: Git, AutoCAD.

Graduate Coursework

Operations Research: Linear/Nonlinear/Integer/Dynamic Programming, Scheduling and Sequencing Theory, Random Processes, Simulation.
Statistics & Mathematics: Probability Theory, Statistical Inference, Statistical Learning, Real Analysis.
Manufacturing & Logistics: Manufacturing Systems Engineering, Production Planning & Control, Lean Manufacturing, Semiconductor Manufacturing, Inventory and Operations Management.

Related Experience

PROS, Houston, TX (a pricing and revenue management solution company)
Scientist Intern (Optimization) Jun 2017 – Aug 2017

Pareto Frontier in Revenue Management [1]
- Proposed a constrained stochastic DP approach to generate Pareto frontier of conflicting airline objectives.

Airline Customer Value Study
- Built 15+ automation tools (Python and VBA) on analyzing past flight data to estimate customer potential revenue if switch from the current leg-based control to network-based products.
- Optimized the code and reduced run time by 97%, saving weeks of overall analysis time.

3-day Hackathon
- Proposed and developed an opportunity-based dynamic flight destination recommendation engine.
- Predicted market opportunities using ridge regression with time series models.

Virginia Tech, Blacksburg, VA
(Winner) *IISE Student Case Competition in Logistics and Supply Chain* Feb 2017 – Mar 2017
- Proposed a two-stage approach for strategic network design and operational decisions.
- Proposed tight mathematical formulations and used decomposition to accelerate. Computational test revealed a reduction of the solution time by 10^3+ times.
- Coded a computer decision support tool based on our proposed approach (C++ with CPLEX).

Biomass Feedstock Logistics Aug 2016 – present
- Identified different integrated biomass feedstock supply chain problems with structural insights.
- Proposed a Dantzig-Wolfe decomposition framework for the integrated biomass feedstock supply chain problem.
- Formulated a fleet management model in the design of a switchgrass-based bio-ethanol supply chain.

Joint Supply Chain Operations [3,4] Jun 2015 – Jun 2017
- Identified the structure of the optimal shipping policy via a Lagrangian multiplier method for joint scheduling of a vendor-buyer system. Proposed a dynamic programming-based algorithm.
- Proposed structural properties and solution methods (both exact and heuristic) for a joint production scheduling and shipping problem with a batching feature.

Semiconductor Fab Simulation Aug 2014 – Dec 2014

- Built simulation models (using AutoMod) of the Automated Material Handling System (AMHS).
- Proposed a coding framework for simulating complex AMHS, allowing flexibly adjusted process sequences.
- Analyzed different scenarios (multiple releasing and dispatching rules) based on cycle time and throughput.

Graduate Teaching Assistant Aug 2014 – May 2016

- Instructed 15+ different manufacturing and electrical labs.
- Presented workshops for graduate students in using simulation softwares (AutoMod and AutoSched).
- Designed case study project for a graduate level course (ISE 6424 Dynamic Programming).

Volkswagen Automotive, Shanghai, China
Logistics Intern 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.

Publications

[1] **Fangzhou Sun,** Wei Wang, and Darius Walczak. *On generating efficient frontier for expected profit contribution and resource utilization*. Working paper, target: Journal of Revenue and Pricing Management.

[2] **Fangzhou Sun**, Rahul Ramachandran, Maichel M. Aguayo, and Subhash C. Sarin. *A taxonomic review of biomass feedstock supply chain problems*. Working paper, target: International Journal of Production Research.

[3] **Fangzhou Sun** and Subhash C. Sarin. *A joint production and delivery schedule for a single-vendor single-buyer system over finite horizon*. Working paper, target: European Journal of Operational Research.

[4] **Fangzhou Sun,** Subhash C. Sarin, and Yuqiang Wang. *Integrated production and shipping scheduling for a single manufacturer and multiple customers*. In review, Journal of Scheduling.

Presentations

- *A joint production and delivery schedule for a single-vendor single-buyer system over finite horizon*, INFORMS Annual Meeting, Houston, TX. 2017
- *Dynamic programming application in revenue management*. Virginia Tech. 2017
- *Introduction to AutoMod and AutoSched AP*. Workshop, Virginia Tech. 2016
- *Integrated production and shipping scheduling for a single manufacturer and multiple customers*. INFORMS Annual Meeting, Philadelphia, PA. 2015

Other Experience

Vice President, INFORMS VT Student Chapter Aug 2015 – May 2016

- Managed finance and memberships of the student organization.
- Raised average weekly seminar attendance by 30% more than the previous academic year.
- Won INFORMS 2016 Student Chapter Annual Award, Magna Cum Laude.

Selected Awards & Honors

First Place Award, IISE 2017 student case competition in Logistics and Supply Chain, *IISE*. 2017
Graduate Student Assembly Travel Fund, *Virginia Tech*. 2015
Alpha Pi Mu, a national industrial engineering honor society, *Virginia Tech*. 2014
Various awards in college: Outstanding Graduate, 1st Prize Scholarship, etc., *Tongji University*. 2010 – 2013
Provincial 1st Prize, Chinese Physics Olympiad, *Chinese Physics Society*. 2009