Fangzhou Sun

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Objective

Seeking full-time opportunities in areas of operations research, industrial engineering, 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) — Dec 2018 (expected)
  - Advisor: 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, Gurobi, 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

Efficient Frontier in Revenue Management [1]

- Proposed a constrained Markov decision process approach to generate Pareto frontier of conflicting airline objectives.

Airline Customer Value Study

- Built 15+ automation tools (Python and VBA) for data cleaning, demand unconstraining, and data format conversion, to analyze customer's potential revenue lift from the current leg-based control to a network-based product.
- 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 a location-inventory-routing problem.
- Tightened the formulation and used decomposition to accelerate. Reduced CPU time by 10^3+ times.
- Coded a computer decision support tool based on our proposed approach (C++ with CPLEX).

Biomass Feedstock Logistics [2,3] — Aug 2016 – present

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

Joint Supply Chain Operations [4,5] — 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.
- Designed case study project for 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 the database.
- Communicated with suppliers to implement a new Just-In-Time system.

Publications

[1] **F. Sun**, S. C. Sarin, W. Wang, and D. Walczak. On generating efficient frontier for expected profit contribution and resource utilization. Working paper. Target: *Journal of Revenue and Pricing Management*.

[2] **F. Sun** and S. C. Sarin. Optimal sorghum biomass feedstock logistics supply chain design and configuration analysis. Working paper. Target: *Bioresource Technology*.

[3] **F. Sun**, R. Ramachandran, M. M. Aguayo, and S. C. Sarin. Biomass feedstock supply chain design — a taxonomic review and a decomposition-based methodology. *International Journal of Production Research*, in press.

[4] **F. Sun** and S. 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*.

[5] **F. Sun**, S. C. Sarin, and Y. Wang. Integrated production and shipping scheduling for a single manufacturer and multiple customers. In review, *Journal of Scheduling*.

Presentations & Posters

- Joint optimization of expected profit contribution and resource utilization. POMS 2018 Annual Conference, Houston, 2018.
- Application of dynamic programming in revenue management. Invited course lecture. Virginia Tech, 2017.
- A joint production and delivery schedule for a single-vendor single-buyer system over finite horizon. 2017 INFORMS Annual Meeting, Houston, 2017.
- Sorghum biomass feedstock logistics. Poster, HBCU Research Summit, Virginia Tech, 2017.
- Introduction to AutoMod and AutoSched AP. Invited course lecture, Virginia Tech, 2016.
- Integrated production and shipping scheduling for a single manufacturer and multiple customers. 2015 INFORMS Annual Meeting, Philadelphia, 2015.

Other Experience

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

- Managed finance and membership. Raised average weekly seminar attendance by 30% over the previous year.
- Won INFORMS 2016 Student Chapter Annual Award, Magna Cum Laude.

Selected Awards & Honors

1st Place Award (graduate level), IISE 2017 student case competition in Logistics and Supply Chain. 2017
Various travel fund awards from department and graduate student assembly, *Virginia Tech*. 2015 – 2017
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