Virgile Galle

BP America
Integrated Supply and Trading
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Education

Massachusetts Institute of Technology, Cambridge, MA
Ph.D. in Operations Research, February 2018.
Relevant Courses: Robust, Integer and Combinatorial Programming and Machine Learning
GPA: 5.0/5.0
Advisors: Cynthia Barnhart and Patrick Jaillet

École Centrale, Paris, France
Bachelor and Master of Engineering, June 2012 and 2013. Major: Applied Mathematics and Statistics
GPA: 4.0/4.0
Advisor: Gilles Faÿ

Lycée Louis-Le-Grand, Paris, France
Sept. 2009 – July 2011
Intensive preparation in Math and Physics for the highly competitive national entrance exams to the leading French Grandes Écoles (engineering schools)

Research Interests

Mathematical Modeling, Combinatorial Optimization, Queuing Theory, Machine Learning, Deep Learning, Transportation, Logistics, Scheduling, Finance, Energy, LNG, Renewables, Gas and Power trading, Quantum Computing

Work Experience

2018 (to present)
BP America, Integrated Supply and Trading, Houston, TX
Quantitative Analyst
Improving valuation capabilities for LNG Portfolio Optimization model and performance by 5 times speedup (Python dev). Developing and implementing combinatorial optimization model for Power dispatch problem. Creating new data-driven calibration model for all cross-commodity deals for IST America

2013 (to 2018)
MIT, Operations Research Center, Cambridge, MA
Research Assistant
Working on increasing efficiency in port operations in a research team including MIT Chancellor and ORC co-director. Proposed efficient and novel solutions to solve the Container Relocation and the Yard Crane Scheduling Problems using techniques such as mathematical programming, dynamic programming and stochastic optimization. Submitted 3 papers to top peer-review journals in OR; Presented at INFORMS 2014/2015/2017 and TSL 2017.

2016 (Summer) **Schlumberger Doll Research Center**, Cambridge, MA
Research Scientist
Pointed out the potential improvement of long term rigs scheduling and fleet sizing. Modeled mathematically the problem and solved it using IP and tuned evolutionary algorithms. The proposed solution incorporates new constraints, halves the cases of customer dissatisfaction and increases up to 5% the field production value. Implemented a fully documented package in Julia, ready to be linked with the existing software.

2015 (Summer) **Amazon.com**, Seattle, WA
Operations Research Intern
Modeled a large scale supply-chain problem: The Inbound Network of Amazon.com. Applied classical OR techniques (e.g. column generation) to solve efficiently the IP formulation. Performed experiments on forecast and historical data and found a potential gain of 17% in cost and in VLT.

2014 (to 2015) **MIT, in coordination with Tampa Bay Rays and Boston Celtics**, Cambridge, MA
Consultant
Designed a scout scheduling algorithm for the Tampa Bay Rays baseball team to improve minor league scouting. Built a lineup optimization tool for the Boston Celtics basketball team providing real-time substitution recommendations.

2012 (Summer) **Thales Optronics**, Glasgow and Belfast, United Kingdom
Intern
Assembled advanced electronics systems in high tech factories for the defense industry. Learned how to work in a structured team, to follow processes and to identify their control and bottlenecks.

Research Experience

2013 (to Present) **MIT, Operations Research Center**, Cambridge, MA
PhD Candidate
Advisors: Cynthia Barnhart and Prof. Patrick Jaillet
Working on increasing efficiency in port operations in a research team including MIT Chancellor and ORC co-director. Proposed efficient and novel solutions to solve the Container Relocation and the Yard Crane Scheduling Problems using techniques such as mathematical programming, dynamic programming and stochastic optimization. Submitted 3 papers to top peer-review journals in OR; Presented at INFORMS 2014/2015/2017 and TSL 2017.

2012 (to 2013) **École Centrale Paris, Laboratory of Mathematics in Interaction with CS**, Paris, France
Assistant Researcher
Advisor: Gilles Faÿ
Created new uniformity tests on the unit sphere and applied those to astro-physical phenomena. Presented a report including several efficient approaches based on Wilcoxon and Kolmogorov-Smirnov tests.

Published Article

"The Stochastic Container Relocation Problem", with S. Borjian, V. Manshadi, C. Barnhart and P. Jaillet, Transportation Science 52 (5): 1035–1058, 2018.
https://doi.org/10.1287/trsc.2018.0828 (citation: 10)

" A new binary formulation of the restricted Container Relocation Problem based on a binary encoding of configurations", with C. Barnhart and P. Jaillet, published in European Journal of Operational Research, 2018, 267(2): 467-477.
https://doi.org/10.1016/j.ejor.2017.11.053 (citation: 15)

"An average-case asymptotic analysis of the Container Relocation Problem", with S. Borjian, V. Manshadi, C. Barnhart and P. Jaillet, published in Operations Research Letters, 2016, 44(6): 723-728.
http://dx.doi.org/10.1016/j.orl.2016.08.006 (citation: 5)

" Yard Crane Scheduling for container storage, retrieval, and relocation", with C. Barnhart and P. Jaillet. European Journal of Operational Research 271 (1): 288-316, 2018.
https://doi.org/10.1016/j.ejor.2018.05.007 (citation: 6)

Unpublished Works

"Container Relocation Problem: Approximation, Asymptotic and Incomplete Information", with S. Borjian, V. Manshadi. C. Barnhart and P. Jaillet, last revised October, 2015
https://arxiv.org/abs/1505.04229. (citation: 11)

"Online Container Relocation Problem", with C. Barnhart and P. Jaillet, October, 2015.

"Optimization models and methods for storage yard operations in maritime container terminals", Thesis, February 2018, https://dspace.mit.edu/handle/1721.1/115592. (citation: 1)

US Patents

"*System and methods for rig scheduling with optimal fleet sizing*", with K. Rashid and P. Tilke. Serial No: 16/166267; Docket No: IS16.1084-US-NP; filed in October 22, 2018.

Invited Talks

2017, Houston, INFORMS Annual Meeting
2017, Chicago, TSL INFORMS First Triennial Conference
2016, Seattle, Amazon Faculty Summit
2015, Philadelphia, INFORMS Annual Meeting (Session Chair)
2014, San Francisco, INFORMS Annual Meeting

Reviewer

Naval Research Logistics
Transportation Research
Operations Research
IIE Transactions and Computers
Operations Research
MIT Sloan Sports Analytics Conference 2016, 2017, 2018, 2019

Honors and Awards

2013 Jean Gaillard Memorial Fellowship
Committee on General Scholarships of Harvard University
Fellowship to study at the Massachusetts Institute of Technology

2013 ODGE Robert Guenassia Award
Office of the Dean of Graduate Education, MIT
Fellowship to study at the Massachusetts Institute of Technology

Skills and Activities

Language: English (fluent), French (native), German (intermediate), Italian (beginner)
Programming: Matlab (expert), Julia (expert), Python (expert), C++ (expert), R (proficient), Gurobi (proficient), Xpress (proficient), SQL (prior experience)
Software: Photoshop, Première Pro and After Effect
Sports: Competition of Tennis, Rugby and Soccer. Empire diploma in the two first
Music: 8 years of piano and musical studies at the conservatory of Paris

Ability to work

EU as citizen of France; USA with a F-1 student visa (STEM-OPT)