

Nicholas Kullman

Operations Research Data Scientist @ Facebook

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SUMMARY

- Experienced (6+ yrs) in operations research, machine learning, and analytics: optimization; simulation; math programming; deep reinforcement learning (artificial intelligence); forecasting; data visualization, manipulation, and analysis
- Innovative: author of 25+ patents
- Strong quantitative skills: PhD Operations Research, MS QERM, BS Physics
- Competent programmer: Python, Java, SQL, Gurobi/Xpress/CPLEX, JavaScript, D3
- Fast learner, effective problem solver and communicator; can adapt and collaborate

SELECTED EXPERIENCE

Operations Research & Data Scientist - *Facebook* - MAY 2020 - PRESENT

- Provide decision support for global business operations, leveraging operations research, machine learning, and data science
- Deliver end-to-end project support: problem formulation, modeling, data queries & analyses, optimization, visualization, and direct-to-stakeholder communications

Doctoral Researcher - *University of Tours, France* - JAN 2017 - MAY 2020

- Formulate, build, and solve mathematical models representing transportation and logistics systems under uncertainty, especially in the context of electric vehicles
- Design and implement optimization solution methods, including exact solutions using commercial solvers, heuristic-based dynamic policies, and dynamic agents trained via deep reinforcement learning with artificial neural networks
- Generate simulations to assess performance of proposed realtime optimization methods
- Develop and maintain Java and Python codebases on GitHub

Co-advisor & Visiting Doctoral Researcher - *CIRRELT, HEC Montréal* - SPRING 2019

- Hire, advise, and manage intern investigating the adaptation of classical transportation problems for machine-learning-based solutions

Graduate Researcher & Teaching Asst. - *University of Washington* - SEP 2013 - DEC 2016

- Build optimization models to identify efficient forestry operations under climate change
- Develop solver for multi-objective optimization problems using CPLEX and Java
- Design interactive web-based visualization of optimization solutions using JavaScript (D3)
- Design material for, teach, and grade problem-solving labs for graduate-level course "Optimization Techniques for Natural Resources"

Telecom Design Engineer - *Sprint, Overland Park, KS* - JUL 2011 - AUG 2013

- Design and lead experiments for telecom equipment, analyze and present results
- Quantitative mathematical analysis of potential sources of RF interference

SELECTED PUBLICATIONS

Electric Vehicle Routing with Public Charging Stations

<https://hal.archives-ouvertes.fr/hal-01928730> (accepted in *Transportation Science*)

frvcpy: An Open-Source Solver for the Fixed Route Vehicle Charging Problem

<https://hal.archives-ouvertes.fr/hal-02496381> (accepted in *INFORMS Journal on Computing*)

Atari-fying the Vehicle Routing Problem with Stochastic Service Requests

<https://arxiv.org/abs/1911.05922>

Dynamic Ridehailing with Electric Vehicles

<https://hal.archives-ouvertes.fr/hal-02463422> (accepted in *Transportation Science*)

SELECTED PATENTS

US Pat. 9,094,814 - *Provision of relay operation information to a wireless communication network*

US Pat. 20,140,321,367/European Pat. 2989852 - *Wireless communication system with multiple Device-to-Device communication configurations*

ACTIVITIES & SERVICE

Build HIV [vaccine efficacy visualization](#) with Fred Hutch Cancer Research Center

Referee for Transportation Science & Transportation Research: Part C

Develop [mapping utility](#) for the vehicle routing community ([VRP-REP](#))

Create [open source Python solver](#) for electric vehicle charging problems

Serve as student-faculty liaison for hiring of quantitative faculty member in UW's College of the Environment

EDUCATION

PhD Computer Science (Operations Research) - *University of Tours, France*

MS Quant. Ecology & Resource Mgmt. - *University of Washington, Seattle, WA*

BS Physics, minor in mathematics - *University of Missouri, Columbia, MO*

- Phi Beta Kappa, Departmental Honors, Summa Cum Laude, 3.98 GPA