Nicholas Kullman

Operations Research PhD Student - *Dynamic Decision Making Under Uncertainty*
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SUMMARY

- Experienced (5+ yrs) in operations research, machine learning, and analytics: optimization; simulation; math programming; deep reinforcement learning (artificial intelligence); data visualization, manipulation, and analysis
- Innovative: author of 25+ patents
- Strong quantitative skills: Operations Research PhD, QERM MS, Physics BS
- Competent programmer: Python, Java, Gurobi, JavaScript, D3, ArcGIS, CPLEX
- Fast learner, effective problem solver and communicator; can adapt and collaborate

SELECTED EXPERIENCE

Doctoral Researcher - *University of Tours, France* - **JAN 2017 - PRESENT**

- Formulate, build, and solve quantitative 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 Gurobi commercial solver, heuristic-based dynamic policies, and dynamic agents trained via deep reinforcement learning with artificial neural networks
- Create computer simulations to assess decision-making of dynamic policies and agents
- Develop and maintain Java and Python codebases on GitHub

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

- Hire, advise, and manage masters student intern investigating the adaptation of classical transportation problem models for machine-learning-based solutions

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

- Build linear and nonlinear mathematical optimization models to identify efficient forestry operations in the context of 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

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

Electric Vehicle Routing with Public Charging Stations
https://hal.archives-ouvertes.fr/hal-01928730

frvcpy: An Open-Source Solver for the Fixed Route Vehicle Charging Problem
https://hal.archives-ouvertes.fr/hal-02496381

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

Develop mapping utility for the Vehicle Routing Problem Repository (VRP-REP)

Create open source Python solver for electric vehicle charging problems

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

EDUCATION

PhD Computer Science (Operations Research) - *University of Tours, France*
JAN 2017 - APR 2020

MS Quant. Ecology & Resource Mgmt. - *University of Washington, Seattle, WA*
SEP 2013 - DEC 2016

BS Physics, minor in mathematics - *University of Missouri, Columbia, MO*
AUG 2007 - MAY 2011

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