




KLAAS FIETE KRUTEIN, PH.D.


Operations Research and Data Scientist


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EXPERIENCE

Research Associate

University of Washington – Supply Chain Transportation & Logistics

 Jun 2019 – Ongoing

 Seattle, WA

- Led collaboration with Municipality of Bowen Island in Canada and coordinated team of 2 people to develop evacuation plan.
- Slashed estimated evacuation time of isolated communities by 70% through mixed-integer stochastic optimization model, solved through meta-heuristics.
- Reduced route time for commercial trucks by 7% through combined OD-matrix estimation and route optimization framework that incorporates expected parking delays into vehicle routing.
- Developed demand-driven mixed integer model to optimize the location of commercial vehicle loading zones in urban areas.

Research Scientist 2 Intern

Amazon, Inc.

 Jun 2021 - Sep 2021

 Bellevue, WA

- Improved expected resource planning cost for trucks by approx. 15% through routing-based resource optimization model using robust optimization and column-generation decomposition techniques in nationwide logistic network.
- Reduced manual adjustments in resource planning process by approx. 60% through flexible block-based resource planning tool.

Research Scientist Intern

Amazon, Inc.

 Jun 2020 - Sep 2020

 Seattle, WA

- Saved \$26M in fixed costs per year in North American middle mile logistics network through combined planning and routing of multiple value streams with a shared equipment fleet.
- Reduced analysis time for equipment rightsizing and combined routing simulation from approx. 3 months to 12 hours of analysis time by leveraging big data warehousing, parallel computing and data pipeline integration.

Research Associate

University of Washington – Dep. of Industrial Engineering

 Sep 2018 - Jun 2019

 Seattle, WA

- Designed experiment, simulator set up, data collection, and analysis for a pilot workload study with flight simulator and developed systematic method for scenario selection.
- Developed a simulation model for investigating the effect of urban traffic density-based vehicle guidance systems on traffic flow.

Material Planner Intern

Tesla, Inc.


 Jun 2018 - Sep 2018

 Reno, NV


SUMMARY

Operations research professional with **2 years** of industry work experience and **4 years** of academic research experience specializing in optimization modeling and data science. Interested in challenging roles in data science or research to utilize my quantitative and leadership skills for organizational and career growth.

MOST PROUD OF

 **Research Output**

that is directly applied and helps organizations and people

 **Personal Growth**

experienced through balancing technical skills with project leadership and interdisciplinary collaboration to maximize impact of the dissertation project

STRENGTHS

InnovatorTeam WorkerLeader

Problem SolverNever Give Up Mentality

OptimizationMachine Learning

SimulationExperimentsStatistics

Data VisualizationCloud Computing

Linear & Non-Linear Programming

PROGRAMMING & TOOLS

Python

SQL

R

Java

Unix Bash











Pandas

NumPy

Scikit-learn

Pyomo

Dplyr


Ggplot2


Shiny


AWS

Gurobi/CPLEX/Xpress


Git























- Reduced number of missing parts in warehouse by 10% through statistical data analysis and machine learning model to identify causes of missing parts and predict inventory shortage.
- Streamlined cross-functional processes for improved material and information flow between three business units.

Supply Chain Improvement Manager

Airbus Operations GmbH

📅 Oct 2016 - Sep 2017

📍 Hamburg, Germany

- Reduced inventory capital tie-up by \$100M through data-driven target-setting process for optimized inventory levels.
- Collaborated with Business Transformation Director on 5 year road map for improved supply chain function, and managed the resulting project portfolio.

Co-op Rotational Internship Program

Airbus Operations GmbH

📅 Aug 2013 - Oct 2016

📍 Hamburg, Germany

- Completed project-based engineering internships in engineering, production, supply chain, and quality departments.

PUBLICATIONS

📄 Journal Articles

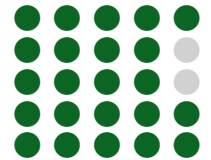
- Dalla Chiara, G., Krutein, K., Ranjbari, A., & Goodchild, A. (2022). Providing curb availability information to delivery drivers reduces cruising for parking. *Under Review at: Nature Scientific Reports*.
- Krutein, K., Chiara, G. D., Dimitrov, T., & Goodchild, A. (2022). Improving commercial vehicle routing through the consideration of cruising for parking. *In preparation*.
- Krutein, K., & Goodchild, A. (2022). The isolated community evacuation problem with mixed integer programming. *Transportation Research Part E: Logistics & Transportation Review*, 161(102710). doi:https://doi.org/10.1016/j.tre.2022.102710
- Krutein, K., McGowan, J., & Goodchild, A. (2022). Evacuating isolated islands with marine resources: A bowen island case study. *International Journal of Disaster Risk Reduction*, 72(102865). doi:https://doi.org/10.1016/j.ijdrr.2022.102865
- Dalla Chiara, G., Krutein, K., Ranjbari, A., & Goodchild, A. (2021). Commercial vehicle driver behaviors and decision making: Lessons learned from urban ridealongs. *Transportation Research Record: Journal of the Transportation Research Board*, 2675, 608–619. doi:https://doi.org/10.1177/036119812111003575

👥 Conference Proceedings

- Krutein, K., Goodchild, A., & Boyle, L. (2022). A meta-heuristic solution approach to the isolated community evacuation problem, Under review at: 2022 Winter Simulation Conference.
- Krutein, K., & Boyle, L. (2019). Systematic approach for the design of flight simulator studies. (Vol. 63, pp. 833–837). doi:https://doi.org/10.1177/1071181319631524

LEADERSHIP SKILLS

Teamwork
Organization
Initiative
Decision Making
Innovation



LANGUAGES

English
German
French
Spanish



EDUCATION

Ph.D. in Industrial Engineering

University of Washington

📅 2019 – 2022

📍 Seattle, WA

Dissertation: Optimization Modeling Approaches to Evacuations of Isolated Communities

M.S. in Industrial Engineering

University of Washington

📅 2017 – 2019

📍 Seattle, WA

B.Sc. in Industrial Engineering & Business Management

FH Nordakademie (University of Applied Sciences Nordakademie)

📅 2013 – 2017

📍 Elmshorn, Germany

Thesis: Framework for a Stock Opt. Strategy

Certificate of Proficiency in Industrial Engineering

University of Auckland

📅 2015 – 2016

📍 Auckland, New Zealand

AWARDS

Fellowship for High Potentials

Foundation of German Business (SDW)

📅 2013 – 2019

Fellowship for Graduate Studies Abroad

German Academic Exchange Service (DAAD)

📅 2017 – 2019

Fellowship for International Exchange

Institute Ranke Heinemann

📅 2015