

# KLAAS FIETE KRUTEIN

Ph.D. Candidate in Industrial Engineering (Operations Research and Data Science)

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Seattle, WA

klaas-fiete-krutein

## 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 3 years of academic research experience specializing in optimization modeling and data science. Looking for a challenging role in data science or research to utilize my quantitative and leadership skills for organizational growth, as well as to enhance my domain knowledge for 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

Innovator    Team Worker    Leader  
Problem Solver    Never Give Up Mentality

Optimization    Machine Learning  
Simulation    Experiments    Statistics  
Data Visualization    Cloud 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

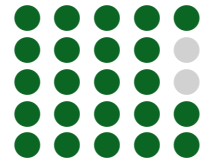
- Chiara, G. D., Krutein, K., Ranjbari, A., & Goodchild, A. (2022). Providing curb availability information to delivery drivers reduces cruising for parking. *Under Review at: Nature Scientific Reports*.
- Krutein, K., Chiara, G. D., & Goodchild, A. (2022). Improving commercial vehicle routing through 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
- Chiara, G. D., 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, Proceedings of the 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

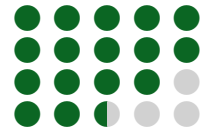
## LEADERSHIP SKILLS

Teamwork  
Organization  
Initiative  
Decision Making  
Innovation



## LANGUAGES

English  
German  
French  
Spanish



## EDUCATION

Ph.D. in Industrial Engineering

University of Washington

📅 Expected Aug 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