Rico Krueger

Associate professor, DTU

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Research profile

I am an Associate Professor in the Intelligent Transportation Systems Section at the Technical University of Denmark (DTU). My research lies at the intersection of behavioural modelling, machine learning and simulation with a focus on developing data-driven methods to plan, manage, and improve human-centric and sustainable transport systems. I specialise in advanced modelling techniques, algorithmic innovations and novel data collection approaches—including immersive virtual reality—to explain and predict human decision-making in mobility contexts. Application areas of my work span travel demand forecasting, multimodal and on-demand transport, emerging mobility technologies, sustainability, and health-related outcomes. I am the recipient of a European Research Council Starting Grant (2024–2029) for my project IMMERSION, which investigates decision-making by integrating choice and process data.

Employment

Associate Professor, Technical University of Denmark, Denmark, 12/2024–present.

Assistant Professor, Technical University of Denmark, Denmark, 02/2022–11/2024.

Postdoc, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, 11/2019–01/2022.

Education

PhD, Civil and Environmental Engineering, University of New South Wales (UNSW), Australia, 03/2016–09/2019. Degree awarded: 01/2020.

MSc, Industrial Engineering and Management, Technische Universität Berlin, Germany, 10/2013–02/2016.

BSc, Industrial Engineering and Management, Technische Universität Berlin, Germany, 10/2010–07/2013.

Research funding

European Research Council (ERC) Starting Grant (10/2024–09/2029): *IMMERSION: Explaining human decision-making by combining choice and process data*. Role: Principal investigator. Amount: EUR 1,500,000.

DTU Alliance Research Project (08/2023–07/2026): *Socially aware artificial intelligence for future transportation*. Role: Principal investigator. Amount: EUR 134,000.

Publications

Journal articles, refereed

J24 Li, D., Mao, W., Pereira, F. C., Xiao, Y., Su, X., **Krueger, R.** (forthcoming): Analyzing the behaviors of pedestrians and cyclists in interactions with autonomous systems using controlled experiments: A literature review. *Transportation Research Part F: Traffic Psychology and Behaviour*.

J23 Cortes Balcells, C., **Krueger, R.**, Bierlaire, M. (forthcoming): Modeling Disease Spread: Integrating Mobility, Awareness, and Behavior. *Transportation*.

J22 Meskar, M., **Krueger, R.**, Rodrigues, F., Aslani, S., Modarres, M. (2025): Combining choice and response time data to analyze the ride-acceptance behavior of ride-sourcing drivers. *Transportation Research Part C: Emerging Technologies*, 171, 104977.

J21 Cortes Balcells, C., **Krueger, R.**, Bierlaire, M. (2024): Multi-objective Optimization of Activity-Travel Policies for Epidemic Control: Balancing Health and Economic Outcomes on Socio-Economic Segments. *Transportation Research Interdisciplinary Perspectives*, 27, 101183.

J20 Oyama, Y., Murakami, D., **Krueger, R.** (2024): A hierarchical Bayesian logit model for spatial multivariate choice data. *Journal of Choice Modelling*, 52, 100503.

J19 Tabasi, M., Raei, A., Hillel, T., **Krueger, R.**, Rashidi, T. H. (2023): Empowering revealed preference survey with a supplementary stated preference survey: demonstration of willingness-to-pay estimation within a mode choice case. *Travel Behaviour and Society*, 33, 100632.

J18 Arkoudi, I., **Krueger, R.**, Azevedo, C. L., Pereira, F. C. (2023): Combining discrete choice models and neural networks through embeddings: Formulation, interpretability and performance. *Transportation Research Part B: Methodological*, 175, 102783.

J17 **Krueger, R.**, Bierlaire, M., Bansal, P. (2023): A Data Fusion Approach for Ride-sourcing Demand Estimation: A Discrete Choice Model with Sampling and Endogeneity Corrections. *Transportation Research Part C: Emerging Technologies*, 152, 104180.

J16 **Krueger, R.**, Bierlaire, M., Gasos, T., Bansal, P. (2023): Robust discrete choice models with t-distributed kernel errors. *Statistics and Computing*, 33 (2).

J15 Manser, P., Haering, T., Hillel, T., Pougala, J., **Krueger, R.**, Bierlaire, M. (2022): Estimating flexibility preferences to resolve temporal scheduling conflicts in activity-based modelling. *Transportation*.

J14 **Krueger, R.**, Daziano, R. A. (2022): Stated choice analysis of preferences for COVID-19 vaccines using the Choquet integral. *Journal of Choice Modelling*, 45, 100385.

J13 Bansal, P., Kessels, R., **Krueger, R.**, Graham, D. J. (2022): Preferences for using the London Underground during the COVID-19 pandemic. *Transportation Research Part A: Policy and Practice*, 160, 45-60.

J12 **Krueger, R.**, Bierlaire, M., Daziano, R. A., Rashidi, T. H., Bansal, P. (2021): Evaluating the predictive abilities of mixed logit models with unobserved inter- and intra-individual heterogeneity. *Journal of Choice Modelling*, 41, 100323.

J11 Bansal, P., Dua, R., **Krueger, R.**, Graham, D. J. (2021): Fuel Economy Valuation and Preferences of Indian Two-wheeler Buyers. *Journal of Cleaner Production*, 294, 126328.

J10 Bansal, P.[*], **Krueger, R.**[*], Graham, D. J. (2021): Fast Bayesian Estimation of Spatial Count Data Models. *Computational Statistics & Data Analysis*, 157, 107152.

J9 **Krueger, R.**, Rashidi, T. H., Vij, A. (2020): X vs. Y: an analysis of intergenerational differences in transport mode use among young adults. *Transportation*, 47, 2203–2231.

J8 **Krueger, R.**, Rashidi, T. H., Vij, A. (2020): A Dirichlet process mixture model of discrete choice: Comparisons and a case study on preferences for shared automated vehicles. *Journal of Choice Modelling*, 36, 100229.

J7 **Krueger, R.**[*], Bansal, P.[*], Buddhavarapu, P. (2020): A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *Accident Analysis & Prevention*, 144, 105623.

J6 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Daziano, R. A., Rashidi, T. H. (2020): Bayesian Estimation of Mixed Multinomial Logit Models: Advances and Simulation-Based Evaluations. *Transportation Research Part B: Methodological*, 131, 124-142.

J5 **Krueger, R.**, Rashidi, T. H., Dixit, V. V. (2019): Autonomous Driving and Residential Location Preferences: Evidence from a Stated Choice Survey. *Transportation Research Part C: Emerging Technologies*, 108, 255-268.

J4 **Krueger, R.**, Rashidi, T. H., Auld, J. (2019): Preferences for travel-based multitasking: Evidence from a survey among public transit users in the Chicago metropolitan area. *Transportation Research Part F: Traffic Psychology and Behaviour*, 65, 334-343.

J3 **Krueger, R.**, Vij, A., Rashidi, T. H. (2018): Normative beliefs and modality styles: a latent class and latent variable model of travel behaviour. *Transportation*, 45 (3), 789-825.

J2 Vij, A., **Krueger, R.** (2017): Random taste heterogeneity in discrete choice models: Flexible non-parametric finite mixture distributions. *Transportation Research Part B: Methodological*, 106, 76-101.

J1 **Krueger, R.**, Rashidi, T. H., Rose, J. M. (2016): Preferences for shared autonomous vehicles. *Transportation Research Part C: Emerging Technologies*, 69, 343-355.

Journal articles, under review

R2 Ojeda-Diaz, A., **Krueger, R.**, Jensen, A. F., Haustein, S.: The (un-)intended consequences of transport electrification: A scoping review of rebound and spillover effects.

R1 Cortes Balcells, C., **Krueger, R.**, Bierlaire, M.: Modeling the Influence of Perceived Risk due to COVID-19 on Daily Activity Scheduling through an Endogenous Choice Set Formation Approach.

Book chapters

BC3 Varotto, S. F.[*], **Krueger, R.**[*], Bierlaire, M. (2024): Modelling travel behaviour: A choice modelling perspective. In Potoglou, D., Spinney, J. (eds): Handbook of Travel Behaviour. Edward Elgar Publishing, Cheltenham, UK.

BC2 Rodrigues, F., **Krueger, R.**, Pereira, F. C. (2024): Model building, inference and interpretation: Developing discrete choice models in the age of machine learning. In Hess, S., Daly, A. (eds): Handbook of Choice Modelling, 2nd edition.

BC1 Bierlaire, M., **Krueger, R.** (2024): Sampling and discrete choice. In Hess, S., Daly, A. (eds): Handbook of Choice Modelling, 2nd edition.

Proceedings

P1 Patterson, Z., **Krueger, R.** (2024): Workshop Synthesis: Smartphones in travel surveys. *Transportation Research Procedia*, 76, 665-669.

[*] joint first authorship.

Academic service

Editorial roles

Associate Editor, *Transportation Research Part A: Policy and Practice*. 01/2025–present.

Member of the Editorial Advisory Board, *Transportation Research Part A: Policy and Practice*. 08/2023–present.

Associate Editor, *Transportation Letters*. 02/2024–01/2025.

Member of the Editorial Board, *Transportation Letters*. 02/2021–present.

Peer review for journals

Frequent peer reviewer for many journals, including: *Accident Analysis & Prevention*, *AStA Advances in Statistical Analysis*, *Computers and Operations Research*, *IATSS Research*, *IEEE Open Journal of Intelligent Transportation Systems*, *International Journal of Sustainable Transportation*, *International Journal of Transportation Science and Technology*, *Journal of Choice Modelling*, *Journal of Cycling and Micromobility Research*, *Journal of Transport Geography*, *Journal of Urban Planning and Development*, *Metrika*, *Nature Sustainability*, *Networks and Spatial Econometrics*, *Public Transport*, *Research in Transportation Economics*, *Scientific Reports*, *Technology in Society*, *Transportation*, *Transportation Letters*, *Transportation Science*, *Transportmetrica A*, *Transport Policy*, *Transportation Research Part A: Policy and Practice*, *Transportation Research Part B: Methodological*, *Transportation Research Part C: Emerging Technologies*, *Transportation Research Part E: Logistics and Transportation Review*, *Transportation Research Record*, *Travel Behaviour and Society*

Research proposal reviews

National Science Foundation (NSF), USA. 25/02/2021–18/03/2021.

National Fund for Scientific and Technological Development (FONDECYT), Chile. 18/10/2018–09/11/2018.

Conference organisation and committee memberships

Member of the Scientific Committee, *12th Triennial Symposium on Transportation Analysis (TRISTAN XII)*, Japan, 22–27 June 2025.

Member of the Scientific Committee, *11th Triennial Symposium on Transportation Analysis (TRISTAN XI)*, Mauritius, 19–25 June 2022.

Workshop co-chair (with Zachary Patterson), *12th International Conference on Transport Survey Methods*, Portugal, 20–25 March 2022.

Invited talks

IT4 **Krueger, R.**: Bayesian modelling and computation for travel demand analysis. PhD School of the 2025 European Association for Research in Transportation (hEART) Symposium, Technical University of Munich, Munich, Germany, 13 June 2025.

IT3 **Krueger, R.**: Stated choice analysis of preferences for COVID-19 vaccines using the Choquet integral. Statistics and econometrics seminar, Faculty of Economics and Business, KU Leuven, Leuven, Belgium, 30 March 2023.

IT2 **Krueger, R.**: Introduction to Bayesian inference. Research seminar, School of Engineering and IT, University of New South Wales, Canberra, Australia, 15 December 2021.

IT1 **Krueger, R.**: Bayesian machine learning and spatial count data models: Advances in estimation and specification. Research seminar, Transport Division DTU Management, Technical University of Denmark, Lyngby, Denmark, 3 February 2021.

Conference presentations

C22 Li, D., Mao, W., Pereira, F. C., Xiao, Y., Su, X., **Krueger, R.**: Understanding and Predicting Human Behavior in Interactions with Autonomous Systems in Urban Environments: A Systematic Review, Challenges, and Opportunities. *12th Symposium of the European Association for Research in Transportation*, Espoo, Finland, 18–20 June 2024.

C21 Meskar, M., **Krueger, R.**, Rodrigues, F., Aslani, S., Modarres, M.: Combining Choice and Response Time Data: A Hierarchical Drift-Diffusion Model of Ride-Sourcing Drivers' Ride Acceptance Decisions. *International Choice Modelling Conference*, Puerto Varas, Chile, 1-3 April 2024.

C20 **Krueger, R.**, Bierlaire, M., Bansal, P.: Ride-sourcing demand estimation using discrete choice models: Accounting for sample selection and endogeneity biases. *16th International Conference on Travel Behaviour Research*, Santiago, Chile, 11-15 December 2022.

C19 **Krueger, R.**, Daziano, R. A.: Stated choice analysis of preferences for COVID-19 vaccines using the Choquet integral. *International Choice Modelling Conference*, Reykjavik, Iceland, 23–25 May 2022.

C18 **Krueger, R.**, Bierlaire, M., Gasos, T., Bansal, P.: Robust discrete choice models with t-distributed kernel errors. *International Choice Modelling Conference*, Reykjavik, Iceland, 23–25 May 2022.

C17 Bansal, P., Kessels, R., **Krueger, R.**, Graham, D. J.: Changes in activity and travel behaviour of London Underground users during the COVID-19 pandemic. *ICMC Mini Online Event*, 28 May 2021.

C16 **Krueger, R.**[*], Bansal, P.[*], Buddhavarapu, P.: A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *9th Symposium of the European Association for Research in Transportation*, 3–4 February 2021.

C15 **Krueger, R.**[*], Bansal, P.[*], Buddhavarapu, P.: A New Spatial Count Data Model with Bayesian Additive Regression Trees for Accident Hot Spot Identification. *2nd Bridging Transportation Researchers Online Conference*, 11–12 August 2020.

C14 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Graham, D. J.: Variational Bayesian Inference for Spatial Negative Binomial Count Data Models with Unobserved Heterogeneity. *2nd Bridging Transportation Researchers Online Conference*, 11–12 August 2020.

C13 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Graham, D. J.: Variational Bayesian Inference for Spatial Negative Binomial Count Data Models with Unobserved Heterogeneity. *Swiss Transport Research Conference*, Ascona, Switzerland, 13–14 May 2020.

C12 Bansal, P.[*], **Krueger, R.**[*], Bierlaire, M., Daziano, R. A., Rashidi, T. H.: Bayesian Estimation of Mixed Multinomial Logit Models: Advances and Simulation-Based Evaluations. *International Choice Modelling Conference*, Kobe, Japan, 19–21 August 2019.

C11 **Krueger, R.**, Bansal, P., Bierlaire, M., Daziano, R. A., Rashidi, T. H.: Variational Bayesian Inference for Mixed Logit Models with Unobserved Inter- and Intra-Individual Heterogeneity. *Swiss Transport Research Conference*, Ascona, Switzerland, 15–17 May 2019.

C10 **Krueger, R.**, Rashidi, T. H., Vij, A.: X vs. Y: An Analysis of Inter-Generational Differences in Transport Mode Use Among Young Adults. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C9 **Krueger, R.**, Rashidi, T. H., Dixit, V. V.: Autonomous Driving and Residential Location Preferences: Evidence from a Stated Choice Survey. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C8 **Krueger, R.**, Rashidi, T. H., Auld, J.: Preferences for travel-based multitasking: Evidence from a survey among public transit users in the Chicago metropolitan area. *Transportation Research Board 98th Annual Meeting*, Washington DC, USA, 13–17 January 2019.

C7 **Krueger, R.**, Vij, A., Rashidi, T. H.: A Dirichlet Process Mixture Model of Discrete Choice with an Application to Route Choice Preferences. *15th International Conference on Travel Behaviour Research*, Santa Barbara, USA, 15–20 July 2018.

C6 **Krueger, R.**, Vij, A., Rashidi, T. H.: A Dirichlet Process Mixture Model of Discrete Choice. *Transportation Research Board 97th Annual Meeting*, Washington DC, USA, 7–11 January 2018.

C5 **Krueger, R.**, Rashidi, T. H.: What Makes You Cycle this Far? An Analysis of Mandatory Bicycle Tour Distances. *Transportation Research Board 97th Annual Meeting*, Washington DC, USA, 7–11 January 2018.

C4 **Krueger, R.**, Rashidi, T. H., Dixit, V. V.: Will Driverless Cars Induce Urban Sprawl? Experimental Design of a Stated Choice Study. *11th International Conference on Transport Survey Methods*, Montreal, Canada, 24–29 September 2017.

C3 **Krueger, R.**, Rashidi, T. H., Vij, A.: Goal-Directed Transport Mode Use: A Structural Equation Modelling Perspective. *International Choice Modelling Conference*, Cape Town, South Africa, 3–5 April 2017.

C2 **Krueger, R.**, Rashidi, T. H., Rose, J. M.: Adoption of Shared Autonomous Vehicles? A Hybrid Choice Modelling Approach based on a Stated Choice Survey. *Transportation Research Board 95th Annual Meeting, Washington DC*, USA, 10–14 January 2016.

C1 **Krueger, R.**, Rashidi, T. H., Rose, J. M.: Identifying Potential Users of Smart Urban Mobility Services: Adoption of Shared Autonomous Vehicles: A Hybrid Choice Modelling Approach based on a Stated Choice Survey. *Workshop on Smart Urban Mobility*, hosted by Edinburgh Napier University, UK, 26–27 November 2015.

Teaching experience

Courses taught

Advanced business analytics	Role:	Course coordinator & lecturer
	Institution:	DTU
	Audience:	Postgraduate students (MSc & PhD)
	Years taught:	2025
Model-based machine learning	Role:	Course coordinator & lecturer
	Institution:	DTU
	Audience:	Postgraduate students (MSc & PhD)
	Years taught:	2022, 2023, 2024
Transport System Analysis – Demand and Planning	Role:	Course coordinator & lecturer
	Institution:	DTU
	Audience:	Postgraduate students (MSc & PhD)
	Years taught:	2023
Exploring the state-of-the-art in quantitative transport science (1 guest lecture)	Role:	Lecturer
	Institution:	DTU
	Audience:	Postgraduate students (PhD)
	Years taught:	2023, 2024
Data and data science: Introduction to Bayesian statistics (1 guest lecture)	Role:	Lecturer
	Institution:	DTU
	Audience:	Undergraduate students (BSc)
	Years taught:	2023

Optimization & Simulation	Role:	Course coordinator & lecturer
	Institution:	EPFL
	Audience:	Postgraduate students (PhD)
	Years taught:	2020, 2021
Discrete Choice Analysis: Predicting Individual Behavior and Market Demand	Role:	Course coordinator (in 2021) & teaching assistant
	Institution:	EPFL
	Audience:	Academic and private sector
	Years taught:	2019–2021
Mathematical modeling of behavior	Role:	Teaching assistant
	Institution:	EPFL
	Audience:	Postgraduate students (MSc)
	Years taught:	2020, 2021
Urban Transport Planning Practice	Role:	Teaching assistant
	Institution:	UNSW
	Audience:	Postgraduate students (MSc & PhD)
	Years taught:	2018
Transport Systems Part 1: Network Analysis	Role:	Teaching assistant
	Institution:	UNSW
	Audience:	Postgraduate students (MSc & PhD)
	Years taught:	2018
Engineering Infrastructure Systems	Role:	Teaching assistant
	Institution:	UNSW
	Audience:	Undergraduate students (BSc)
	Years taught:	2016, 2018

Teaching certifications

University Teacher Training Programme at DTU, comprehensive training in university teaching and learning with a particular focus on student-centred and learning outcome-based teaching in technology and engineering, estimated workload of 250 hours, 2022–2023.

Supervision

Postdocs

Lui Thomsen (02/2025–present).

PhD students

Lanlan Yan (09/2025–present): *Effectively combining choice and process data for explaining and predicting human decision-making: Interpretability and information fusion*, DTU.

Johanne Conradsen (08/2025–present): *Flexible and scalable modelling of human decision-making using choice and process data*, DTU.

Danya Li (08/2023–present): *Socially-aware artificial intelligence for future transportation*, DTU.

Alfredo Ojeda-Diaz (12/2022–present): *Transport technology adoption: electric vehicle purchase motives and related behavioural and environmental effects*, DTU.

Ioanna Arkoudi (02/2022–01/2024): *Embedding Representations for Discrete Choice and Travel Demand Models*, DTU.

Cloe Cortes Balcells (08/2021–02/2025): *Epidemic Management: Integrating Behavioral, Mobility, and Epidemiological Perspectives*, EPFL.

Master's theses

Meriam Al-Shawi, Christopher Nielsen (08/2024–03/2025): *Data-Driven Strategies for Bridge Management: Forecasting and Behavioral Insights at Sund & Bælt*, DTU.

Paraskevas-Emmanouil Stratigakis (02/2024–12/2024): *Unveiling the prevailing opinion and dominant arguments of socio-political issues on Reddit through Argument Mining*, DTU.

Zoltán Varga (01/2023–09/2023): *Changing the planned maintenance to forecasted maintenance on the railway switches*, DTU.

Zsófia Könyves (01/2023–06/2023): *Analysis of multi-year household travel diary data using dynamic topic models*, DTU.

Grigorios Papaspyropoulos (02/2022–07/2022): *Development of a decision support tool for predicting the performance of football players*, DTU.

Julien Harbulot (02/2020–08/2020): *Transport mode classification with smartphone accelerometer data: An end-to-end deep learning approach*, EPFL.

Interns

Nora Glage (08/2025–12/2025), Ambroise Favre (03/2021–06/2021).

Awards and honours

DTU Visiting Scholar Program, joint application with Ricardo A. Daziano (Cornell University), 05–07/2023.

Conference participation abroad, Otto Mønsted Foundation, 05/2022, 04/2024.

Tuition Fee Scholarship and living allowance, granted by the University of New South Wales to support doctoral research, 2016–2019.

PROMOS scholarship of the German Academic Exchange Service (DAAD) for the support of a master thesis at the University of New South Wales (Sydney, Australia), 2015.

Study abroad scholarship of the Technische Universität Berlin for two exchange semesters (coursework) at the University of New South Wales (Sydney, Australia), 2014.

24th Congress Bundestag Youth Exchange Program (formerly Fulbright), high school student exchange to Eugene, Oregon, USA, 2007–2008.

Academic visits and exchanges

Visiting scholar, Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland, 01/2019–06/2019. Supervisor: Prof Michel Bierlaire. Research topic: Variational Bayesian inference for discrete choice models.

Visiting scholar, University of New South Wales, Australia, 01/2015–05/2015. Supervisor: Dr Taha H. Rashidi. Research topic: Adoption of shared autonomous vehicles.

Coursework exchange, University of New South Wales, Australia, 02/2014–11/2014.

Hosting of academic visitors

Wencan Mao (01/10/2023–15/10/2023), Aalto University, Visiting PhD student.

Mana Meskar (07/2023–12/2023), Sharif University of Technology, Visiting PhD student.

Ricardo A. Daziano (05/2023–07/2023), Cornell University, Visiting Professor, with support from the DTU Management Visiting Scholar Program.

Project involvement

Optimization of individual mobility plans to simulate future travel in Switzerland. Sponsor: Innosuisse (Swiss Innovation Agency). External partner: Swiss Federal Railways (SBB, Switzerland). Role: Co-investigator. 09/2020–01/2022.

OrgVisionPro: Automated organizational design and optimization. Sponsor: Innosuisse (Swiss Innovation Agency). External partner: Laurent Jaquenoud (CLEAP, Switzerland). Role: Project manager. 10/2019–06/2021.

Empirical Estimation of Time Use and Disutility of Travel Time in the Context of New Mobility Technologies. Sponsor: Argonne National Laboratory (USA). Role: Co-investigator. 04/2017–09/2018.

Language and technical skills

Python, Julia, R, MATLAB.

English (full professional proficiency), German (native), French (advanced), Danish (intermediate).