

Sanmay Shelat, PhD

sanmayatwork@gmail.com | (551)-247-8853
linkedin.com/in/sanmayshelat | github.com/sanmayshelat | Google Scholar
Jersey City, NJ (open to relocation) | Authorized to work in the US without sponsorship

Experience

Data Scientist (Marketplace/Pricing); FREENOW

Feb 2022–Present

Responsible for developing data science products & services for two-sided ride-hailing marketplace in Europe, designing pricing experiments, and discovering new opportunities.

Key projects include:

- Modelling drivers' short- and long-term engagement with hierarchical Gaussian mixture models, resulting in stable segmentations for supply planning
- Modelling (heterogeneity in) ride conversion behaviour with gradient-boosted trees, neural networks, and latent classes of logistic regressions for personalised rider incentives
- Geospatial clustering based on temporal patterns of metrics using k-means
- Implementing CUPED (using pre-experimental data as control variates) for A/B tests and analysing the impact of various factors on efficiency improvement
- Reducing false positive rate and improving power in switchback experiments

Main tools: Python, Spark on Databricks, MLflow, Presto/Spark SQL/PostgreSQL, Airflow, Docker, Git

PhD Researcher; Delft University of Technology

Dec 2017–Dec 2021

Developed methodological and experimental approaches to study choice behaviour of travellers and derive empirical results. Published and presented in a number of journals and conferences (see my Google Scholar page). Key scientific contributions include:

- A method to derive travellers' route choice sets that calibrates an elimination-by-aspects decision model using passively-collected smart card data or actively-collected survey data
- A method to quantify travellers' subjective evaluations of waiting time uncertainty under different assumptions and using both passively- and actively-collected data
- Empirical knowledge on public transport travellers' preferences during the pandemic using latent class choice modelling

Main tools: Python, PostgreSQL, Git, Biogeme, Qualtrics

Scientific Task Lead; My-TRAC: An EU-Consortium Project

Jun 2018–Feb 2020

Led a 36 person-month task involving academic, governmental, and consultancy partners for an EU-H2020 project developing a trip planning mobile application. Coordinated and contributed to scientific deliverables, application backend architecture, and APIs for trip choice modelling and mode/route recommendation.

Main tools: Python, PostgreSQL, Docker, Git

Researcher (Personal Spaces and Data Science); Philips Lighting

Feb 2017–Nov 2017

Developed a scientifically novel, Markov-chain activity-based pedestrian simulation platform for connected lighting research.

Main tools: MATLAB

Education

PhD, Behavioural Economics; Delft University of Technology — Dec 2017–Jun 2023

Thesis: Route Choice Behaviour under Uncertainty in Public Transport Networks

Key courses: Discrete choice analysis, Behavioural decision theory, Experimental economics

MSc, Transport & Planning (hons.); Delft University of Technology — Sep 2015–Nov 2017

Grade: 8.65/10 (cum laude; highest distinction awarded at Delft University of Technology)

Thesis: A Markov-chain Activity-based Model for Pedestrians in Office Buildings

BTech, Civil Engineering; Nirma University — Aug 2011–Jun 2015

Grade: 9.10/10 (gold medallist for all four years)

Tech Stack

Scripting: Python, SQL, PySpark, MATLAB, VBA

Libraries: scikit-learn, statsmodels, scipy, tensorflow/keras, pandas, numpy, postgis, geopandas, biogeme, matplotlib, seaborn, plotly

Tools/Frameworks: Spark, Airflow, Docker, Git, Databricks, MLflow, SPSS, Qualtrics

Expertise

Econometrics: Causal inference, decision theory, structural equation modelling, discrete choice modelling

Data Science: end-to-end machine learning, CI/CD pipelines, ETLs, job scheduling, (Bayesian) statistical analysis

Experimentation: A/B/n testing, switchback methods, variance reduction techniques, stated & revealed choice experiments

Other Projects

Bicycle-Public Transport

Combination: Identified prototypical users and analysed the bicycle-public transport combination by applying latent class cluster analysis on Dutch national trip diary data.

Transit Network Vulnerability

Analysis: Developed a mesoscopic stochastic user-equilibrium assignment model and applied it to assess the spill-over effects of disruptions in public transport networks via simulation.

Awards

Delft University of Technology:

Transport Institute Excellence Scholarship for MSc studies (tuition and stipend, value: €50,000)

Nirma University: Gold medallist for all years of BTech

Science Academies of India:

Prestigious fellowship sponsoring research visit

Languages

English (full working proficiency)

Dutch, German, French (CEFR: A2)

Hindi, Gujarati (Native)