Sampo Smolander

Data Scientist, Software Developer, PhD in Applied Mathematics

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After working as a scientist and scientific programmer in universities, in 2019 I changed to working in industry. At Wolt, I designed a courier routing problem optimization solver, to replace an older approach. Then I moved to more usual Data Science topics (time series and forecasting of customer demand and courier availability, and to pricing models for courier compensation).

I am ideally looking for something else than a narrow one-topic Data Science role, perhaps in a smaller company than Wolt/DoorDash now is.

Education

PhD in Applied Mathematics, University of Helsinki

Scientific publications: 22 journal articles, 3 book chapters: https://samposm.kapsi.fi/papers/

Technical Skills

Programming: Python (Pandas, NumPy, SciPy, JAX, scikit-learn), C++, C, SQL, Fortran, MPI and OpenMP parallel programming, a little Scala
Machine Learning: XGBoost, LightGBM, pyGAM, Time Series Forecasting
Data Engineering: Snowflake, AWS, Flyte, a little Dagster
Optimization: Combinatorial Optimization, Vehicle Routing Problems
Visualization: Matplotlib, Seaborn, Plotly, Looker, Matlab, Mathematica, Data Storytelling
Other: Linux, Git, Mercurial

Work History

Wolt — Helsinki, Finland

Applied Scientist — 2024 –
Logistics Researcher — 2019 – 2024

- Combinatorial optimization: Designed courier routing problem solver to replace an older approach. This is still in use at Wolt and also later adopted by DoorDash, after DoorDash acquired Wolt in 2022.

  Wolt is a food delivery company. The specific flavor of the Vehicle Routing Problem is: Dynamic Capacitated Vehicle Routing Problem with Time Windows, Pickup and Delivery (DCVRPPDTW). Vehicle routing problems are combinatorial optimization problems and large problems are typically solved by dedicated algorithms, usually a combination of metaheuristics and local search. You could formulate them as linear integer programming problems, but even general industrial strength solvers (Gurobi) that are excellent in many other problems, will not scale well. Our new solver scaled well and really saved us in 2020 when the pandemic caused demand for food delivery to grow quickly.
- Forecasts for customer demand, retention of couriers, and recruitment of new couriers, communicated these to stakeholders with dashboards and planning tools, scaled to 500+ cities.
- Price optimization models for courier compensation.

Princeton University Princeton, NJ, USA

Department of Ecology and Evolutionary Biology, and NOAA Geophysical Fluid Dynamics Laboratory

Associate Research Scholar 2015 – 2018

- Climate models: I designed and implemented mathematical models of biochemistry, chemistry and physics in the carbon cycle component in the NOAA GFDL climate model.

University of Helsinki Helsinki, Finland

Department of Physics, Division of Atmospheric Sciences

Postdoctoral Researcher 2008 – 2014

- Atmosphere and ecosystem modeling: I worked on a range of topics (atmosphere models, atmospheric chemistry, ecosystem models, soil carbon cycle models), usually writing code to improve models or implement new models. And running models on computer clusters. Writing and publishing research. Teaching courses, mentoring students.

University College London London, UK

Department of Geography

Research Fellow 2007 – 2008

- Remote sensing: With ray tracing simulation approach, I wrote models of light scattering and reflection in vegetation canopies, simulating the physics that generates satellite images, developing physics-based methods for satellite image interpretation.

Language Skills

Finnish: Native, English: Fluent, Swedish: Basic.