

# JASON SCHOETERS

## Software Engineer in Optimisation and AI – 9 years experience

 jschoete.github.io/

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### SUMMARY

PhD computer scientist using fundamental **techniques and structure** to solve complex **real problems** involving uncertain objectives, imperfect data, and large search spaces.

With my experience spanning domains from agricultural genomics to market clearing and physical simulation, I am always interested in **challenging and impactful** projects.



Click/scan to visit  
my website 

### EXPERIENCE

#### Optimisation Engineer in Metal Sheet Forming

 Sep 2025 – Ongoing

**DeepForm Limited, Cambridge, UK**

• Bayesian Optimisation • Neural Networks • Simulation Tuning

Creating fine-grained multi-criteria optimisation application using BOtorch and AutoForm for novel pressing technique.

#### Visiting Research Fellow on Enumeration Techniques

 Jun 2025 – Aug 2025

**National Informatics Institute, Tokyo, Japan**

• Flashlight Partition • Reverse Search • Proximity Search

Solved several edge cases of hard network robustness problems by formulating efficient enumeration algorithms.

#### Research Associate on Payment Networks

 Sep 2024 – Aug 2025

**University of Florence, Italy**

• Fraud Detection • Surveillance • Blockchain Formation

Designed complex algorithms detecting structure in periodic dynamic networks with distinct fidelity/runtime ratios.

#### Research Associate in Behavioural Finance

 Jan 2023 – Aug 2024

**University of Cambridge, UK**

• Online Markets • Contract Pricing • Choice Prediction

Analysed the complexity landscape of market disparity experiments to predict outcomes and emergent behaviour.

#### Postdoctoral Research Fellow on Dynamic Networks

 Sep 2021 – Dec 2022

**University of Le Havre, France**

• Cluster Detection • Network Generation • Convolution

Proved communication networks can avoid maximum message density by removing or monitoring large cycles.

#### Research Assistant on Mobility Models

 Nov 2020 – Aug 2021

**University of Bordeaux, France**

• Drone Swarms • Robot Patrolling • Epidemic Control

Built multiple mobility models for local agents resulting in an interaction graph respecting desired global properties.

### SELECTED SKILLS

#### Optimisation & Algorithms:

Bayesian Optimisation, Multi-fidelity, Mixed-Integer Linear Programs, Local Search, Branch & Bound, Dynamic Programming, Approximation, Heuristics, Pareto Set, ...

#### Machine Learning & AI:

(Graph) Neural Networks, Active Learning, Generative Adversarial Networks, Decision Trees, Surrogate Functions, Gaussian Processes, Dimensional Reduction, ...

#### Programming & Software Engineering:

Java, Python, C, C++, Rust, SQL, Bash, Git, Linux, Windows, PyTorch, BoTorch, GoogleTest, A/B Testing, CPLEX, HiGHS, Data Pipelines, Cloud, CI/CD, YouTrack, ...

#### Scientific Computing & Simulation:

Physics-Based Simulation, Finite Element Analysis, Mesh Sensitivity Analysis, Abaqus, AutoForm, Computer-Assisted Design, FreeCAD, Discrete Geometry, ...



## </> SELECTED PORTFOLIO

FULL LIST ON  GITHUB

### Estimation, Approximation and Exact Computation of Overlapping Canopy Areas



Requested by [Dr Clément Larue](#) and [Biogeco team](#)

 2024

• Java • Bash • Windows OS • JBotSim visualisation

Computes non-trivial area to determine optimal placement of pollinators. I designed a **Monte Carlo sampling** estimation, a deterministic **Quadtree approximation**, and an **exact geometric partitioning** into polygons and “pizza slices”.

### Automatic Analysis of Big DNA Genotyping Data



Requested by [Dr Clément Larue](#) and [Biogeco team](#)

 2023

• Java • Apache POI API • Bash • Windows OS

Ad-hoc program **cleaning** and **analysing big DNA data** to detect or estimate parent-child mismatches and determine chestnut reproduction vectors. Designed for direct **integration into established pipeline** working with CSV/FASTA files.

### Distributed Mobility Models inducing Temporal Graph Properties



Requested by [Prof Arnaud Casteigts](#) and [JBotSim team](#)

 2022

• Java • visualised and merged with JBotSim

MANET **mobility models** inducing **connectivity** properties and excluding stronger properties for **security and robustness** reasons. The models employ only **local knowledge and message passing** and adapt to **any mobility constraints**.

## EDUCATION

### National Qualification for Professorship in Computer Science, AI, Data, and Security

[Higher Education and Research Ministry, France](#)

 2023

### PhD in Mathematics and Computer Science

[University of Bordeaux, France](#)

 2017 – 2020

Thesis: Temporal Graph Theory and Mobility Problems

### Visiting Graduate Student in Mathematics

[Simon Fraser University, Canada](#)

 2020

Subject: Gossiping and Spanners in Barbell Graphs

### Master in Fundamental Computer Science

[University of Bordeaux, France](#)

 2015 – 2017

Internship: TSP with Acceleration and Inertia Constraints

### Bachelor in Computer Science

[University of Bordeaux, France](#)

 2012 – 2015

Internship: Art Replication through Image Processing

## SELECTED PUBLICATIONS

FULL LIST ON  DBLP

### Temporal Cycle Detection and Acyclic Temporization



[J. Araujo](#), [D. de Andrade](#), [A. Ibiapina](#), [A. Marino](#), [J. Schoeters](#), [A. Silva](#)

 Electronic Journal of Combinatorics (EJ-C)

 2026+

The concept of a **cycle** is **extended to temporal graphs**, studying **cycle detection**, and if they can be **avoided by design**. We circumvent **NP-hardness** through a complex **FPT algorithm**, and obtain **(im)possibility schemes** for avoiding cycles.

### Enumerating Spanners in Temporal Graphs



[L. Cioni](#), [K. Kurita](#), [A. Marino](#), [J. Schoeters](#), [T. Uno](#)

 Journal of Theoretical Computer Science (TCS)

 2026+

We study **enumeration of connected structures** called temporal spanners, considering **single-source, multiple-sources** and **all-to-all**, proving increasing complexity from **polynomial-delay**, to **Dual-hardness**, to **no output-polynomial**.

### Vector TSP: A Traveling Salesperson Problem with Racetrack-like Acceleration Constraints



[A. Casteigts](#), [M. Raffinot](#), [M. Raskin](#), [J. Schoeters](#)

 Journal of Discrete Applied Mathematics (DAM) Special Edition

 2025

In this paper, we adapt **TSP** by considering a **mobile entity with acceleration**. We prove **NP-hardness** and then provide and test a **high-performing heuristic**, combining a **multi-point  $A^*$  path-finding algorithm** with a **2-opt heuristic**.