

Simon van Lierde

PhD researcher and research software engineer · Open research infrastructure for sustainability science

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PROFILE

Full-stack research software engineer with three years of professional experience in software, data, and solution architecture, now halfway through a PhD in Industrial Ecology at CML, Leiden University. I build open-source tools and data infrastructure that turn environmental research into reliable, user-friendly software. As lead developer of ReLab I own the platform end to end, build dashboards and interactive visualizations that carry research to non-specialist audiences, and work FAIR and in the open throughout.

EXPERIENCE

PhD Researcher in Industrial Ecology @ CML, Leiden University 2024 – present

- Lead developer of ReLab, owning the end-to-end software lifecycle: FastAPI/PostgreSQL backend with OAuth and Alembic migrations, React/TypeScript and Expo front-ends, CI/CD, Cloudflare networking, restic backups, and OWASP ASVS security hardening.
- Ran two data-collection workshops (135 participants) and a lab deployment of the platform; the pilot captured 78 products, 1,331 components, and 3,610 images.
- Designed and deployed a central observability stack (OpenTelemetry, Grafana, OpenTofu-managed infrastructure) as a shared service for CML research software.
- Built a Raspberry Pi camera plugin for automated image capture, with an OpenAPI spec and PyPI releases.

Data Manager @ Nationale Milieudatabase (Dutch Environmental Database) 2023 – 2024

- Managed environmental databases underpinning sustainability calculations for the Dutch construction sector; improved data structure, consistency, and validation, and advised on software implementation.
- Aligned the national environmental databases with open data standards (EU LCDN, PEF), collaborating with policymakers, developers, and industry.

Solution Architect & Product Manager @ Metabolic 2022 – 2023

- Shaped the technical design and held product ownership of LCA and sustainability-reporting tools; guided the implementation of LCA, EEIOA, and MFA methodologies across the division's projects.
- Product owner and domain expert for automated sustainability-reporting tools (FastAPI, Vue) that replaced static Excel models with dynamic REST APIs and web applications.

Consultant & Data Analyst, Sustainable Industries @ Metabolic 2021 – 2022

- Built Python-based environmental-impact models (LCA, MFA) for sustainability-consulting projects with industry, NGO, and government clients.

EDUCATION

MSc Industrial Ecology @ Leiden University & TU Delft 2018 – 2023

Joint degree; specialization in environmental modeling, LCA, and GIS. Thesis used Python geoscripting to model environmental impacts of space cooling in The Hague.

BSc Physics & Astronomy @ Radboud University 2014 – 2018

Focus on mathematics, theoretical physics, and programming; exchange semester at the National University of Singapore.

PROJECTS

ReLab github.com/CMLPlatform/relab

Open-source platform for product teardown, circular-economy, and computer-vision research.

Computer-vision taxonomy visual simonvanlierde.github.io/cv-ie-taxonomy

Interactive React/SVG exploded-teardown map of a computer-vision taxonomy, prototyped as a companion visual for an upcoming publication.

MSc-thesis cooling dashboard simonvanlierde.github.io/msc-thesis-ie

Interactive dashboard for a cooling-demand and LCA model of The Hague, with Nivo (D3-based) charts and MapLibre maps.

Public web apps simonvanlierde.github.io

Maintain a CRediT authorship-statement generator and other open-source web apps, all CI-tested and continuously deployed on GitHub Pages and Cloudflare.

TALKS & TRAINING

- Conference talks: NWO NAC 2026, Brightcon 2025, and ISIE 2025.
- BMVA Computer Vision Summer School (2026)
- HPC Spring School: distributed and GPU computing, Utrecht University (2026)
- Autumn School on inventory modelling at scale, Départ de Sentier (2025): contributed a merged pull request to [sentier.dev's](#) open LCA-data libraries
- PhD Summer School on AI, machine learning and neural networks, Utrecht University (2024)

SKILLS

PROGRAMMING	Python, TypeScript/JavaScript, SQL
FRONT-END	React, Expo/React Native, Nivo (D3), MapLibre, accessibility (WCAG AA, axe-core)
BACK-END	FastAPI, REST/OpenAPI, OAuth, PostgreSQL, Alembic
DEVOPS	Docker, GitHub Actions, OpenTofu/Terraform (IaC), Cloudflare, Grafana, uv, pnpm, devcontainers
PRACTICES	Git/GitHub, pytest, Playwright, PyPI packaging, documentation, reproducible workflows, FAIR and open science, OWASP ASVS
DATA SCIENCE & ML	PyTorch, Pandas
DOMAIN MODELING	LCA, MFA, EEIOA, GIS, circular economy
LANGUAGES	Dutch (native), English (fluent), French (B1), Chinese (A2)

INTERESTS

Climbing · Hiking · Cooking