

Simon Vermeir

Portfolio **simonvermeir.com**

BELGIUM

18.04.1996

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EDUCATION

Ghent	UGent, Faculty of Engineering and Architecture
	MSc. Computer Science Engineering major Artificial Intelligence
	Thesis Optimizing Diffusion Models for Generative Antibody Design
	Promotor Prof. Dr. Ir. Thomas Demeester & Prof. Dr. Ir. Kathleen Marchal
Ghent 2018-2020	KU Leuven, Faculty of Engineering Technology
	MSc. Engineering Technology: Electronics-ICT option ICT, Software
	Thesis The Job Sequencing and Tool Switching Problem Cum Laude
	Promotor Prof. Dr. Ir. Greet Vanden Berghe
Ghent 2014-2019	KU Leuven, Faculty of Engineering Technology
	BSc. Engineering Technology: Electronics-ICT option ICT
Ghent 2015-2016	UGent, Faculty of Sciences
	BSc. Informatics (suspended)
Asse 2008-2014	Sint-Martinus Scholen Asse: ASO
	Sciences-Languages

SKILLS

Software Engineering	
Type	Deep Learning, Machine Learning, GUI, Optimization, Data Science, Simulation, IOS
Programming	Python incl. PyTorch & Tensorflow, Java, Javascript, Swift, C++, Rust, OBJ-C, PHP, Bash, Assembly, SQL, IDP
Workflow	Jira scrum master experience, GIT, CI/CD (GitLab)
Web Development	React, HTML & CSS, REST, GraphQL, Flask, SQL...
Graphic Design	UI, UX, Branding, 3D Modeling

EXPERIENCE

AI Research (thesis)	Ugent/ IDLab(Imec)	Optimizing Diffusion Models for Generative Antibody Design		2025
		Sampling	Diagnosed sampling bias in DiffAb where rare antibody classes were under-sampled; fixed by engineering a custom PyTorch Word2Vec-style sampler ($\alpha=0.75$). Redesigned train/val/test split for rigorous evaluation. Reduced structural error (RMSD) by 10.7%	
		Guidance	Hypothesized that SIMS a guidance technique originally for images, could solve data scarcity in drug design. Adapted and implemented negative guidance for Diffab to subtract model bias using an auxiliary model, reducing structural error (RMSD) by 7.7%.	
		Tooling	Architected a training/inference/benchmarking pipeline on the university GPU cluster (trained 20+ models, generated 100K+ complexes). Integrated ESM-2 (LLM) as a proxy for biological plausibility beyond geometric metrics. Documented scripts for future graduate/PhD students.	
Operational Research (thesis)	KU Leuven/ CoDes(Imec)	The Job Sequencing and Tool Switching Problem (combinatorial optimization, NP-hard)		2020
		Optimization	Developed novel Ruin-and-Recreate local search operator (SMRI) that clusters jobs by tool usage to strategically destruct and rebuild schedules via greedy best-insertion on job subsets. Simulated Annealing as meta-heuristic and using a well established constructive heuristic.	
		Performance	Designed custom data structures, optimized KTNS decoder and implemented delta evaluation , exploiting problem properties for efficient search.	
Full-Stack developer	Codify	Full-Stack Developer		2019
		Project	Developed a management app for Digipolis (City of Antwerp). Started in summer and continued part-time through the following semester to support development.	
		Technologies	ReactJS , GraphQL, Docker, KoaJS, PostgreSQL...	
Various student jobs	Eclair	Operator	Industrial Bakery, made pastries & did packaging	2021
	Action Asse	Retail Associate	Shelf stocker, Cashier, Service	2014 - 2020

STRENGTHS

Polymath	Bridging Operations Research, Generative AI and Biology
Builder	Full-stack autonomy. From research ideas to deployed systems.
Visual	Turning high-dimensional complexity into intuitive visual insights.

LANGUAGE

Dutch	■■■■■
French	■■■
English	■■■■
German	■

PERSONAL

- Architecture & Design
- Creating [Software] projects
- Jiu Jitsu & Weightlifting & Running

AWARDS / MEDIA

- “Word Web Wonder”
2nd place, 2010
- The Social Hour
Episode 93, 46:10, 2013