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Willem Vanhulle



EXPERIENCE

OTIV (Railway automation)
Software engineer

Ghent, Belgium
Apr. 2024 - June 2025

- **Distributed systems:** Remote freight train control system, async iterator toolkit, real-time connectivity monitoring, video and telemetry streaming, state machines. (Rust, Tokio)

Inbiose (Biotechnology)
Software engineer

Ghent, Belgium
June 2021 - April 2024

- **Full-stack development:** Scientific web applications. (TypeScript, JavaScript, HTML, SCSS, Svelte, Rust, R, Python)
- **Industrial control:** Automatic control industrial fermentation robot, integrate optical sensors. (Python, Rust, C++)
- **Database systems:** Create scientific databases, model complex scientific processes. (R, SQL)

MAJOR PROFESSIONAL PROJECTS

Emergency breaking mechanism - OTIV

Sept. 2024 - Mar. 2025

- **Real-time monitoring:** Heartbeat system detecting connection failures.
- **Stream processing:** Designed pub-sub stream aggregator to trigger emergency breaking.

HOBBY PROJECTS

Splitting data streams: Async runtime-agnostic stream combinator library. See [crate](#) and [conference talk at EuroRust](#). (Rust)

Smart plant pot workshop: Watering system with a Raspberry Pi Pico / ESP32c6 and async Embassy: see [GitHub](#). (Rust, Embassy)

Lean riddles workshop: Interactive problem-solving using dependent types. See [GitHub](#). (Lean)

EDUCATION

University of Utrecht (Summer School)
Formalizing mathematics in Lean
Thesis: Formal bayesian inference in Monty Hall

Utrecht, Netherlands
July 2025 - July 2025

- **Courses:** Lean, Proof-assistants, Dependent type theory, Formal methods and Functional programming.

KU Leuven (University)
Master Pure Mathematics
Thesis: Cubical type theory at DistriNet

Leuven, Belgium
Sep. 2017 - June 2019

- **Courses:** Algebra, Analysis, Discrete mathematics, Differential geometry, Unified geometry, Topology, Machine learning and Neural networks.
- **Volunteering:** Coordinator student association.

HOBBIES

Community founder: Founder of sysghent.be. Talks, workshops, networking in Ghent about systems programming.