ir. Lennart Van Hirtum

Inventor of the wheel

PERSONAL DETAILS

Birth	April 3, 1999
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EDUCATION

Ma. Engineering Computer Science AI KU Leuven Cum Laude

Ba. Engineering Sciences

KU Leuven Cum Laude

PROFILE

- Strong self-taught programming skills. I've been developing since 2013. I started out with Java and z80 assembly, later shifting to C++, and finally shifting to Rust.
- Experienced at developing High-Performance Computing Applications, as well as building GPU and FPGA accelerators.

PROJECTS

First computation of the 9th Dedekind Number

C++-Verilog

Originally this began as my master's thesis project ("A path to compute the 9th Dedekind Number using FPGA Supercomputing"). Near the end of the thesis I discovered a theorethical way to compute it leveraging FPGA Supercomputing. I worked on this project for the following two years, and we published our results in April 2023 [Hir+23]. Our result can also be found on wikipedia: https://en.wikipedia.org/wiki/Dedekind_number

Physics3D

C++ - OpenGL

Matthias Vandersanden and I teamed up to build a 3D physics engine, that after 3 years of work boasts an impressive repertoire of features. My focus was the core physics engine itself, while Matthias worked on the graphics and interface.

Founder of uniluc.com

Web development. HTML-CSS-JS-PHP-SQL

Uniluc is a student community with well over 100 members centered around gaming, game hosting and tournaments. I got the team together, set up the server, built the website and publicly presented to advertise the project.

2017-2019

2018-2021

2020-2023

2016-2019

2019-2021

EMPLOYMENT HISTORY

Student Researcher

DTAI - KU Leuven under Prof. Tom Schrijvers

I contributed to the AutBound (https://github.com/tschrijv/AutBound) project as a student researcher and used the tool to generate Haskell code from formal grammars in development at the time. I wrote both formal grammar definitions in AutBound's custom language and Haskell execution code.

Joint PhD KU Leuven - University of Melbourne

Promotor: Prof. Greet Vanden Berghe

I spent 6 months working on a Dual Doctorate between KU Leuven and the University of Melbourne. In this time I learned about Integer Linear Programming and built models for Nurse Rostering problems using Gurobi and CPLEX modelling software. One accomplishment I'm quite proud of is that I was able to find the optimal solution for one of the last unsolved Nurse Rostering Benchmark Instances. http://www.schedulingbenchmarks.org/changes.html. After 6 months, I quit to have more time to finish the Dedekind Project, and to follow my calling towards hardware design.

PUBLICATIONS & TALKS

- [HC23a] Lennart Van Hirtum and Patrick De Causmaecker. A computation of D(9) using FPGA Supercomputing. 2023. URL: https://boolean.w.uib.no/bfa-2023/#accepted.
- [HC23b] Lennart Van Hirtum and Patrick De Causmaecker. Computation of the 9th Dedekind Number using FPGA Supercomputing. 2023. URL: https://www. youtube.com/watch?v=kFfmmB3irWU.
- [Hir+23] Lennart Van Hirtum et al. A computation of D(9) using FPGA Supercomputing. 2023. arXiv: 2304.03039 [cs.DM].
- [HP24] Lennart Van Hirtum and Christian Plessl. Latency Counting in the SUS Language. 2024. URL: https://www.youtube.com/watch?v=7P0BvXSHLpY.

AWARDS

Finalist at the Flanders Mathematics Olympiad

2015-2016

 $\begin{array}{c} 1 \ {\rm aug} \ 2020 \ - \\ 30 \ {\rm sept} \ 2020 \end{array}$

20 feb 2022 -

1 aug 2022