Universiteit Leiden

The Netherlands

Data structures for quantum circuit verification and how to compare them
Vinkhuijzen, L.T.

Curriculum Vitae

Lieuwe was born on 14th October 1993 in Leiderdorp. At Leiden University, he obtained his BSc. degree in Computer Science in 2014 and his MSc. degree in Computer Science in 2018. In 2019, he received the VERSEN Master Thesis Award for his MSc. thesis, supervised by Andre Deutz, entitled "A Quantum Polynomial Hierarchy and a Short Proof of Vyalyi's Theorem." At Leiden University and under the supervision of Holger Hoos, Alfons Laarman, and Tim Coopmans he conducted the research presented in this doctoral thesis. During his PhD period, he continued to follow various courses, such as on abstract algebra, model checking, the theory of algorithms, communication in science, academic writing and scientific conduct. In 2020, he received the SETTA Best Video Presentation Award for his presentation of his publication "Model Checking With Sentential Decision Diagrams," which became Chapter 7 in this thesis. In 2022 and 2023, he made research visits to the Johannes Kepler Universität in Linz, Austria, to collaborate on research on decision diagrams in the group of Robert Wille.

His research interests lie in theoretical computer science, particularly computational complexity theory and algorithm design.

Currently he works at CGI as a software engineer, exploring ways in which industry can adopt newly emerging opportunities in quantum computing.

In his free time, he enjoys playing the cello and doing gymnastics.

Titles in the IPA Dissertation Series since 2022

A. Fedotov. *Verification Techniques for xMAS.* Faculty of Mathematics and Computer Science, TU/e. 2022-01

M.O. Mahmoud. *GPU Enabled Automated Reasoning.* Faculty of Mathematics and Computer Science, TU/e. 2022-02

M. Safari. *Correct Optimized GPU Programs.* Faculty of Electrical Engineering, Mathematics & Computer Science, UT. 2022-03

M. Verano Merino. *Engineering Language-Parametric End-User Programming Environments for DSLs.* Faculty of Mathematics and Computer Science, TU/e. 2022-04

G.F.C. Dupont. *Network Security Monitoring in Environments where Digital and Physical Safety are Critical.* Faculty of Mathematics and Computer Science, TU/e. 2022-05

T.M. Soethout. *Banking on Domain Knowledge for Faster Transactions.* Faculty of Mathematics and Computer Science, TU/e. 2022-06

P. Vukmirović. *Implementation of Higher-Order Superposition.* Faculty of Sciences, Department of Computer Science, VU. 2022-07

J. Wagemaker. *Extensions of (Concurrent) Kleene Algebra.* Faculty of Science, Mathematics and Computer Science, RU. 2022-08

R. Janssen. *Refinement and Partiality for Model-Based Testing.* Faculty of Science, Mathematics and Computer Science, RU. 2022-09

M. Laveaux. *Accelerated Verification of Concurrent Systems.* Faculty of Mathematics and Computer Science, TU/e. 2022-10

S. Kochanthara. *A Changing Landscape: On Safety & Open Source in Automated and Connected Driving.* Faculty of Mathematics and Computer Science, TU/e. 2023-01

L.M. Ochoa Venegas. *Break the Code? Breaking Changes and Their Impact on Software Evolution.* Faculty of Mathematics and Computer Science, TU/e. 2023-02

N. Yang. *Logs and models in engineering complex embedded production software systems.* Faculty of Mathematics and Computer Science, TU/e. 2023-03

J. Cao. *An Independent Timing Analysis for Credit-Based Shaping in Ethernet TSN.* Faculty of Mathematics and Computer Science, TU/e. 2023-04

K. Dokter. *Scheduled Protocol Programming*. Faculty of Mathematics and Natural Sciences, UL. 2023-05

J. Smits. *Strategic Language Workbench Improvements*. Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2023-06

A. Arslanagić. *Minimal Structures for Program Analysis and Verification*. Faculty of Science and Engineering, RUG. 2023-07

M.S. Bouwman. *Supporting Railway Standardisation with Formal Verification*. Faculty of Mathematics and Computer Science, TU/e. 2023-08

S.A.M. Lathouwers. *Exploring Annotations for Deductive Verification*. Faculty of Electrical Engineering, Mathematics & Computer Science, UT. 2023-09

J.H. Stoel. *Solving the Bank, Lightweight Specification and Verification Techniques for Enterprise Software*. Faculty of Mathematics and Computer Science, TU/e. 2023-10

D.M. Groenewegen. *WebDSL: Linguistic Abstractions for Web Programming*. Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2023-11

D.R. do Vale. *On Semantical Methods for Higher-Order Complexity Analysis*. Faculty of Science, Mathematics and Computer Science, RU. 2024-01

M.J.G. Olsthoorn. *More Effective Test Case Generation with Multiple Tribes of AI*. Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2024-02

B. van den Heuvel. *Correctly Communicating Software: Distributed, Asynchronous, and Beyond*. Faculty of Science and Engineering, RUG. 2024-03

H.A. Hiep. *New Foundations for Separation Logic*. Faculty of Mathematics and Natural Sciences, UL. 2024-04

C.E. Brandt. *Test Amplification For and With Developers*. Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2024-05

J.I. Hejderup. *Fine-Grained Analysis of Software Supply Chains*. Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2024-06

J. Jacobs. *Guarantees by construction*. Faculty of Science, Mathematics and Computer Science, RU. 2024-07

O. Bunte. *Cracking OIL: A Formal Perspective on an Industrial DSL for Modelling Control Software*. Faculty of Mathematics and Computer Science, TU/e. 2024-08

R.J.A. Erkens. *Automaton-based Techniques for Optimized Term Rewriting.* Faculty of Mathematics and Computer Science, TU/e. 2024-09

J.J.M. Martens. *The Complexity of Bisimilarity by Partition Refinement.* Faculty of Mathematics and Computer Science, TU/e. 2024-10

L.J. Edixhoven. *Expressive Specification and Verification of Choreographies.* Faculty of Science, OU. 2024-11

J.W.N. Paulus. *On the Expressivity of Typed Concurrent Calculi.* Faculty of Science and Engineering, RUG. 2024-12

J. Denkers. *Domain-Specific Languages for Digital Printing Systems.* Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2024-13

L.H. Applis. *Tool-Driven Quality Assurance for Functional Programming and Machine Learning.* Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2024-14

P. Karkhanis. *Driving the Future: Facilitating C-ITS Service Deployment for Connected and Smart Roadways.* Faculty of Mathematics and Computer Science, TU/e. 2024-15

N.W. Cassee. *Sentiment in Software Engineering.* Faculty of Mathematics and Computer Science, TU/e. 2024-16

H. van Antwerpen. *Declarative Name Binding for Type System Specifications.* Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2025-01

I.N. Mulder. *Proof Automation for Fine-Grained Concurrent Separation Logic.* Faculty of Science, Mathematics and Computer Science, RU. 2025-02

T.S. Badings. *Robust Verification of Stochastic Systems: Guarantees in the Presence of Uncertainty.* Faculty of Science, Mathematics and Computer Science, RU. 2025-03

A.M. Mir. *Machine Learning-assisted Software Analysis.* Faculty of Electrical Engineering, Mathematics, and Computer Science, TUD. 2025-04

L.T. Vinkhuijzen. *Data Structures for Quantum Circuit Verification and How To Compare Them.* Faculty of Mathematics and Natural Sciences, UL. 2025-05