Curriculum Vitae

Name:	Arjan Cornelissen
Date of birth:	August 3rd, 1996
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Links:	Google Scholar, LinkedIn

Research interests

My primary research area is the field of quantum algorithms. I investigate the quantum query, time and space complexity of computational problems, by proving lower bounds on these quantities and constructing quantum algorithms that are efficient with regards to these measures.

Publications

Near-optimal Quantum Algorithms for Multivariate Mean Estimation ***(November 2021)***
In collaboration with Yassine Hamoudi and Sofiene Jerbi, arXiv:2111.09787

Quantum algorithms for multivariate Monte Carlo estimation ***(July 2021)***
In collaboration with Sofiene Jerbi, arXiv:2107.03410

Scalable Benchmarks for Gate-Based Quantum Computers ***(April 2021)***
In collaboration with Johannes Bausch and András Gilyén, arXiv:2104.10698

Span programs and quantum time complexity ***(August 2020)***
In collaboration with Stacey Jeffery, Maris Ozols and Alvaro Piedrafita, arXiv:2005.01323
Appeared in Proceedings of the 45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020)

Quantum gradient estimation of Gevrey functions ***(September 2019)***
Preprint available at arXiv:1909.13528

Talks

Span programs and quantum time complexity ***(August 26th, 2020)***
At the 45th International Symposium on Mathematical Foundations of Computer Science (MFCS 2020) [recording]

Span programs and quantum time complexity ***(June 22nd, 2020)***
Invited talk at the colloquium of the Institute for Quantum Computing (IQC) in Waterloo, Canada [recording]

Quantum gradient estimation and its application to reinforcement learning ***(June 5th, 2019)***
Invited talk at the theory seminar of QuTech in Delft, the Netherlands

Quantum gradient estimation ***(April 24th, 2019)***
Invited talk at the Dutch Mathematical Congress (NMC 2019)

Education

PhD Quantum Computing ***(October 2018 – September 2022)***
University of Amsterdam / QuSoft
Primary direction of research: Quantum Algorithms
Supervisor: Maris Ozols

Master Applied Mathematics ***(September 2016 – September 2018)***
Delft University of Technology
Area of specialization: Analysis / Quantum Computing
Average grade: 9.4/10
Thesis project: Quantum Gradient Estimation and its application to Quantum Reinforcement Learning
Supervisors: Ronald de Wolf and Martijn Caspers

Double Bachelor Applied Mathematics & Applied Physics ***(September 2013 – August 2016)***
Delft University of Technology
Average grade: 9.3/10
Thesis project: Quantum Computation – Shor's algorithm
Supervisors: Jan van Neerven and Miriam Blaauboer

Work experience

Internship Mathematical Consulting ***(September – December 2017)***
Sioux LIME
I have developed a software package that simulates the propagation of monochromatic waves through optical setups, alongside with a numerical method that orthonormally integrates moving frames.

Teaching Assistant ***(September 2014 – September 2018)***
Delft University of Technology
I taught courses at the Bachelor and Master of Applied Mathematics.

Freelance Writer ***(September 2014 – August 2016)***
Malmberg
I assisted in the development of a mathematics textbook for secondary school students.

Awards

ASML Graduation Prize for Mathematics ***(November 2018)***
Koninklijke Hollandsche Maatschappij der Wetenschappen (KHMW)
Award for the best master's thesis in mathematics in the Netherlands.

Young Talent and Encouragement Award ***(November 2014)***
Koninklijke Hollandsche Maatschappij der Wetenschappen (KHMW)
Award for obtaining the highest average grade among the first-year students of Applied Physics.

Other activities

CWI PhD Activity Committee ***(January 2020 – present)***
This committee organizes social events for employees of CWI. I am co-chair of this committee at present.

Google Hashcode Finalist ***(April 2021)***
We ranked 22nd in this team-based programming competition out of over 9000 competing teams.

Benelux Algorithm and Programming Contest (BAPC) ***(Fall 2017, 2019, 2020 & 2021)***
This is a programming competition for teams from the Netherlands and Belgium.

International Mathematics Competition (IMC) ***(August 2017, July 2018, August 2019)***
I earned a silver medal at this worldwide mathematics competition in Blagoevgrad, Bulgaria.

National Inter-University Mathematics Olympiad (LIMO) ***(May 2016, 2017 & 2018)***
This is a mathematics championship for Dutch and Belgian university teams.

Skills

Programming skills:

I am comfortable with these languages:

- Python 2/3
- Java, C/C++
- MATLAB/Octave
- HTML/CSS/Javascript/PHP
- Zilog Z80 Assembly

Language skills:

- Fluent: Dutch, English
- High-school level: French

Interactive skills:

I enjoy giving presentations and explaining complicated ideas in a simple manner.