











ARIANNE MEIJER - VAN DE GRIEND

QUANTUM SOFTWARE ENGINEER

I am a Postdoc working on quantum software for Noisy Intermediate-scale Quantum (NISQ) devices at the University of Helsinki. My specialization is in compilation methods for quantum computers.

Additionally, I am a Quantum Software Engineer at IQM.

PERSONALIA

	Arianne Meijer - van de Griend		arianne.vandegriend@helsinki.fi		English (professional)
	University of Helsinki, Finland		github.com/aerylia		Dutch (native)
	0000-0001-5946-0958		linkedin.com/in/aerylia		German (intermediate)
					Finnish (Beginner)

EDUCATION

- 01/2024:** **Computer Science PhD, University of Helsinki, Helsinki (Finland)**
Graduated with distinction.
- 06/2022:** **QCHS Summer school, EPFL, Lausanne (Switzerland)**
Learned about quantum computing hardware and software.
- 08/2019:** **Master Artificial Intelligence, Radboud University, Nijmegen (the Netherlands)**
Judicium: Cum Laude (i.e. graduated with distinction)
- 06/2019:** **Master Computing Science, Radboud University, Nijmegen (the Netherlands)**
- 01/2019:** **Bachelor Artificial Intelligence, University of Groningen, Groningen (the Netherlands)**
- 10/2015:** **Bachelor Computer Science, University of Groningen, Groningen (the Netherlands)**

EXPERIENCE

- current :** **Postdoctoral researcher, University of Helsinki, Helsinki (Finland)**
Researching quantum software.
- current :** **Quantum Software Engineer, IQM, Espoo (Finland)**
Building the quantum software stack.
- 08/2024:** **Junior Quantum Software Engineer, IQM, Espoo (Finland)**
Building the quantum software stack.
- 01/2024:** **Doctoral researcher, University of Helsinki, Helsinki (Finland)**
Researching NISQ software. Supervisors: Jukka K. Nurminen and Sabrina Maniscalco. [Mei24a]
- 12/2020:** **Project researcher, University of Turku, Turku (Finland)**
Researching quantum computing algorithms in particular VQE.
- 04/2020:** **Research scientist, Cambridge Quantum Computing, Cambridge (United Kingdom)**
Developing new methods for $t|ket\rangle$ i.e. researching quantum compiling techniques. [MD23]
- 03/2019:** **Teaching assistant quantum computing, Radboud University, Nijmegen (the Netherlands)**
Researched a compiling technique for quantum computers and wrote an paper about it. [KM20]
- 11/2018 :** **Graduation internship Computing Science, Machine2Learn, Amsterdam (the Netherlands)**
Researched natural language generation in the form of a chatbot and language style transfer. Supervisors: Tom Heskes (RU) Wouter Oosterheert (Machine2Learn). [Mei19]
- 02/2018:** **Internship Artificial Intelligence, Simon, Eindhoven (the Netherlands)**
Created an automatic invoice processor. Supervisors: George Kachargis (RU) Martha Larson (RU) Erik van Breusegem (SIMON). Grade: 8.5/10.

- 02/2017: **Junior data scientist, Anchormen, Amsterdam (the Netherlands)**
Worked on several Data Science and AI projects.
- 08/2016: **Graduation Internship Artificial Intelligence, RadboudUMC, Nijmegen (the Netherlands)**
Used kinship verification for syndrome diagnosis. Supervisors: Marco Wiering (RuG) Jayne Hehir-Kwa (RadboudUMC) Hamdi Dibeklioglu (TU Delft).
- 08/2015: **Graduation Internship Computer Science, Atos, Groningen (the Netherlands)**
Used text mining for predictive maintenance on Atos' computer network. Supervisors: Michael Biehl (RuG) Marco Aiello (RuG) Mark Niemeijer (Atos).

GRANTS, AWARDS, AND HONOURS

- Business Finland Project on Enhanced Middleware for Quantum Software (EM4QS) (8/2024-12/2026) €1.200.000,- shared with University of Jyväskylä
- PhD Computer Science, graduated with distinction (2024)
- Hanken Quantum Hackathon 2023, second place.
- Donasci **travel grant** (2022) €650,- to go to QCHS Summer school
- Suomen Kulttuurirahasto **doctoral thesis grant** (2021) €26.000,-
- University of Helsinki **salaried doctoral position** (2021) equivalent to 4 years, full-time work
- Master Artificial Intelligence, **cum laude** honours (2019)

PROFESSIONAL SERVICES

- Organizing committee member International Workshop of Quantum Compilers 2025
- Hanken Quantum Hackathon 2024 mentor and juror
- Working group Secretary P2995 IEEE Standards Association (6/2022 - 10/2024)
- Program committee member Quantum Resource Estimation 2022
- Steering committee member Women in Quantum (2020-2021)

PERSONALITY

I love to challenge myself both creatively and intellectually. I particularly enjoy combining established techniques in new ways.

Or in the words of Spoonboy from the Matrix (1999):
**Do not try and think outside the box, that's impossible.
Instead, only try to realize the truth... There is no box.**



PUBLICATIONS

Published

- [Mei25] **Arianne Meijer-van de Griend**. "A comparison of quantum compilers using a DAG-based or phase polynomial-based intermediate representation". In: *Journal of Systems and Software* 221 (2025), p. 112224.
- [Hua+24] Qunsheng Huang, David Winderl, **Arianne Meijer-van de Griend**, and Richie Yeung. "Redefining lexicographical ordering: Optimizing pauli string decompositions for quantum compiling". In: *2024 IEEE International Conference on Quantum Computing and Engineering (QCE)*. Vol. 1. IEEE. 2024, pp. 885–896.
- [Mei24a] **Arianne Meijer-van de Griend**. "Advances in Quantum Compilation in the NISQ Era". In: (2024).
- [Mei24b] **Arianne Meijer-van de Griend**. "The Quantum Circuit Model is not a Practical Representation of Quantum Software". In: *2024 IEEE International Conference on Software Analysis, Evolution and Reengineering - Companion (SANER-C)*. 2024, pp. 146–148. DOI: 10.1109/SANER-C62648.2024.00025.

- [SMM24] Vlad Stirbu, **Arianne Meijer-van de Griend**, and Jake Muff. “Exposing the hidden layers and interplay in the quantum software stack”. In: *2024 IEEE 21st International Conference on Software Architecture Companion (ICSA-C)*. IEEE. 2024, pp. 24–25.
- [EMM23] Massimo Equi, **Arianne Meijer-van de Griend**, and Veli Mäkinen. “From Bit-Parallelism to Quantum String Matching for Labelled Graphs”. In: *34th Annual Symposium on Combinatorial Pattern Matching (CPM 2023)*. Ed. by Laurent Bulteau and Zsuzsanna Lipták. Vol. 259. Leibniz International Proceedings in Informatics (LIPIcs). Dagstuhl, Germany: Schloss Dagstuhl – Leibniz-Zentrum für Informatik, 2023, 9:1–9:20. ISBN: 978-3-95977-276-1. DOI: 10.4230/LIPIcs.CPM.2023.9. URL: <https://drops.dagstuhl.de/entities/document/10.4230/LIPIcs.CPM.2023.9>.
- [MD23] **Arianne Meijer-van de Griend** and Ross Duncan. “Architecture-Aware Synthesis of Phase Polynomials for NISQ Devices”. In: *Electronic Proceedings in Theoretical Computer Science* 394 (Nov. 2023). In Proceedings QPL 2022, arXiv:2311.08375. This paper was originally accepted as Submission 38 in QPL2020, but was not included in the proceedings because of a clerical error., pp. 116–140. DOI: 10.4204/eptcs.394.8.
- [ML23] **Arianne Meijer-van de Griend** and Sarah Meng Li. “Dynamic Qubit Routing with CNOT Circuit Synthesis for Quantum Compilation”. In: *Electronic Proceedings in Theoretical Computer Science* 394 (Nov. 2023), pp. 363–399. DOI: 10.4204/eptcs.394.18.
- [MN22] **Adriana Meijer-van de Griend** and Jukka K Nurminen. “QuantMark: A benchmarking API for comparing VQE algorithms”. In: *IEEE Transactions on Quantum Engineering* (2022), pp. 1–1. DOI: 10.1109/TQE.2022.3159327.
- [KM20] Aleks Kissinger and **Arianne Meijer-van de Griend**. “CNOT circuit extraction for topologically-constrained quantum memories”. In: *Quantum Information and Computation* 20.7&8 (2020). Also presented at QPL 2019, Chapman University (Orange, USA), pp. 581–596. DOI: 10.26421/QIC20.7-8-4.

With the editor

- [Win+23] David Winderl, Qunsheng Huang, **Arianne Meijer-van de Griend**, and Richie Yeung. “Architecture-Aware Synthesis of Stabilizer Circuits from Clifford Tableaus”. In: (2023). arXiv: 2309.08972 [quant-ph]. URL: <https://arxiv.org/abs/2309.08972>.

Other

- [Ren+25] Michael Renger, Jeroen Verjauw, Nicola Wurz, Amin Hosseinkhani, Caspar Ockeloen-Korppi, Wei Liu, Aniket Rath, Manish J. Thapa, Florian Vigneau, Elisabeth Wybo, Ville Bergholm, Chun Fai Chan, Bálint Csatári, Saga Dahl, Rakhim Davletkaliyev, Rakshyakar Giri, Daria Gusenkova, Hermann Heimonen, Tuukka Hiltunen, Hao Hsu, Eric Hyypä, Joni Ikonen, Tyler Jones, Shabeeb Khalid, Seung-Goo Kim, Miikka Koistinen, Anton Komlev, Janne Kotilahti, Vladimir Kukushkin, Julia Lamprich, Alessandro Landra, Lan-Hsuan Lee, Tianyi Li, Per Liebermann, Sourav Majumder, Janne Mäntylä, Fabian Marxer, **Arianne Meijer - van de Griend**, Vladimir Milchakov, Jakub Mrožek, Jayshankar Nath, Tuure Orell, Miha Papič, Matti Partanen, Alexander Plyushch, Stefan Pogorzalek, Jussi Ritvas, Pedro Figueroa Romero, Ville Sampo, Marko Seppälä, Ville Selinmaa, Linus Sundström, Ivan Takmakov, Brian Tarasinski, Jani Tuorila, Olli Tyrkkö, Alpo Välimaa, Jaap Wesdorp, Ping Yang, Liuqi Yu, Johannes Heinsoo, Antti Vepsäläinen, William Kindel, Hsiang-Sheng Ku, and Frank Deppe. *A Superconducting Qubit-Resonator Quantum Processor with Effective All-to-All Connectivity*. 2025. arXiv: 2503.10903 [quant-ph]. URL: <https://arxiv.org/abs/2503.10903>.
- [Abd+24] Leonid Abdurakhimov, Janos Adam, Hasnain Ahmad, Olli Ahonen, Manuel Algaba, Guillermo Alonso, Ville Bergholm, Rohit Beriwal, Matthias Beuerle, Clinton Bockstiegel, Alessio Calzona, Chun Fai Chan, Daniele Cucurachi, Saga Dahl, Rakhim Davletkaliyev, Olexiy Fedorets, Alejandro Gomez Frieiro, Zheming Gao, Johan Guldmyr, Andrew Guthrie, Juha Hassel, Hermann Heimonen, Johannes Heinsoo, Tuukka Hiltunen, Keiran Holland, Juho Hotari, Hao Hsu, Antti Huhtala, Eric Hyypä, Aleks Hämäläinen, Joni Ikonen, Sinan Inel, David Janzso, Teemu Jaakkola, Mate Jenei, Shan Jolin, Kristinn Juliusson, Jaakko Jussila, Shabeeb Khalid, Seung-Goo Kim, Miikka Koistinen, Roope Kokkonen, Anton Komlev, Caspar Ockeloen-Korppi, Otto Koskinen, Janne Kotilahti, Toivo Kuisma, Vladimir Kukushkin, Kari Kumpulainen, Ilari Kuronen, Joonas Kylmälä, Niclas Lamponen, Julia Lamprich, Alessandro Landra, Martin Leib, Tianyi Li, Per Liebermann, Aleks Lintunen, Wei Liu, Jürgen Luus, Fabian Marxer, **Arianne Meijer-van de Griend**, Kunal Mitra, Jalil Khatibi Moqadam, Jakub Mrožek, Henriikki Mäkynen, Janne Mäntylä, Tiina Naaranoja, Francesco Nappi, Janne Niemi, Lucas Ortega, Mario Palma, Miha Papič, Matti Partanen, Jari Penttilä, Alexander Plyushch, Wei Qiu, Aniket Rath, Kari Repo, Tomi Riipinen, Jussi Ritvas, Pedro Figueroa Romero, Jarkko Ruoho, Jukka Rabinä, Sampo Saarinen, Indrajeet Sagar, Hayk Sargsyan, Matthew Sarsby, Niko Savola, Mykhailo Savyt-skyi, Ville Selinmaa, Pavel Smirnov, Marco Marín Suárez, Linus Sundström, Sandra Stupieńska, Eelis Takala, Ivan Takmakov, Brian Tarasinski, Manish Thapa, Jukka Tiainen, Francesca Tosto, Jani Tuorila, Carlos Valenzuela, David Vasey, Edwin Vehmaanperä, Antti Vepsäläinen, Aapo Vienamo, Panu Vesanen, Alpo Välimaa, Jaap Wesdorp, Nicola Wurz, Elisabeth Wybo, Lily Yang, and Ali Yurtalan. *Technology and Performance Benchmarks of IQM's 20-Qubit Quantum Computer*. 2024. arXiv: 2408.12433 [quant-ph]. URL: <https://arxiv.org/abs/2408.12433>.

- [Mei19] **Arianne Meijer-van de Griend**. *Constrained quantum CNOT circuit re-synthesis using deep reinforcement learning*. Master thesis Artificial Intelligence. 2019. ResearchGate: RG.2.2.11886.77125.
- [van18] **Arianne van de Griend**. *Natural language generation for commercial applications*. Master thesis Computing Science. 2018. ResearchGate: RG.2.2.21953.10087.

TEACHING

01/2025 - 12/2027	:	PhD Supervisor Lauri Vuorenkoski, University of Helisinki, Helsinki (Finland)
01/2025 - 12/2027	:	PhD Supervisor Aakash Ravindra Shinde, University of Helisinki, Helsinki (Finland)
09/2024 - 12/2024	:	Supervisor bachelor thesis projects, University of Helisinki, Helsinki (Finland)
08/2024 - now	:	Supervisor of various Master thesis projects, University of Helisinki, Helsinki (Finland)
01/2024 - 04/2024	:	TA Intruduction to the progamming of quantum computers, University of Helsinki, Helsinki (Finland) <i>Giving lectures and grading assignments</i>
01/2022 - 06/2022	:	TA Intruduction to the progamming of quantum computers, University of Helsinki, Helsinki (Finland) <i>Grading assignments</i>
01/2019 - 06/2019	:	Teaching assistant Combinatorics, Radboud University, Nijmegen (the Netherlands) <i>Helping students with exercises and grading them.</i>
01/2019 - 06/2019	:	Teaching assistant Calculus and Probability, Radboud University, Nijmegen (the Netherlands) <i>Helping students with exercises and grading them.</i>
01/2019 - 06/2019	:	Teaching assistant Representation and Interaction, Radboud University, Nijmegen (the Netherlands) <i>Helping students with exercises and grading them (Prolog).</i>
09/2014 - 11/2014	:	Internship computer science teacher, Zernike College, Haren (the Netherlands) <i>Full time teacher of computer science in high school (1/2 VWO and 4 havo/VWO).</i>

ORATION

	Location	Title
<i>OUTDATED</i>		
Event		
Business Finland Quantum Computing Campaign Launch event (17.11.2022)	Helsinki (Finland)	Panelist "Where is Finland heading with Quantum?"
Quantum physics and logic 2022	Oxford (UK)	Dynamic qubit allocation and routing for constrained topologies by CNOT circuit re-synthesis [ML23]
Quantum Resource Estimation 2021	online	Quantmark: A benchmarking API for comparing VQE algorithms. [MN22]
Quantum physics and logic 2020	Paris (online)	Architecture-aware synthesis of phase polynomials for NISQ devices. [MD23]
Quantum physics and logic 2019	Orange (USA)	CNOT circuit extraction for topologically constrained quantum memories. [KM20]

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