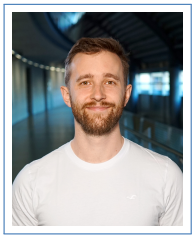
Lukas Burgholzer

Curriculum Vitae

+43 664 9754740
burgholzer@me.com
burgholzer.me
burgholzer
Lukas Burgholzer
@BurgholzerLukas



Experience

2025–present **CTO and Founding Member of the Munich Quantum Software Company GmbH (MQSC)**, *A software startup to provide for quantum computing what we take for granted in conventional IT*, `https://munichquantum.software`.

2024–present **Technical Lead of the Munich Quantum Software Stack (MQSS)**, *The endeavour of the Munich Quantum Valley—a research initiative comprising more than 400 researchers—to build a full-stack quantum computing ecosystem.*

2023–present **Chief Developer of the Munich Quantum Toolkit (MQT)**, *A collection of design automation tools and software for quantum computing developed by the Chair for Design Automation at the Technical University of Munich as well as the Munich Quantum Software Company*, `https://mqt.readthedocs.io`.

2023–present **Postdoctoral Researcher**, *Technical University of Munich*, Germany.
Chair for Design Automation.

2019–2023 **Doctoral Researcher**, *Johannes Kepler University Linz*, Austria.
LIT Secure and Correct Systems Lab. Institute for Integrated Circuits.

2018–2019 **Graduate Research Associate**, *MathConsult GmbH*, Linz, Austria.

Education

2019–2023 **PhD Studies in Computer Science**, *Johannes Kepler University Linz*, Austria.
Supervisor: Univ.-Prof. Dr. Robert Wille (Institute for Integrated Circuits), *passed with distinction*

2016–2019 **Bachelor's Degree in Computer Science**, *Johannes Kepler University Linz*, Austria.
passed with distinction

2017–2018 **Master's Degree in Industrial Mathematics**, *Johannes Kepler University Linz*, Austria.
passed with distinction

2013–2016 **Bachelor's Degree in Mathematics**, *Johannes Kepler University Linz*, Austria.
passed with distinction

Skills

Languages German (native), English (fluent)

Programming Modern C++, Python, GitHub, CI/CD, CMake

Accomplishments

2025 Received the EDAA Outstanding Dissertation Award awarded by the European Design and Automation Association in recognition of the contributions to the advancement of design, automation and test.

2024 Received the ACM SIGDA Outstanding PhD Dissertation Award in recognition of the contributions to the advancement in the EDA field.

2024 Nomination for the GI Dissertation Award awarded by the German Informatics Society in cooperation with the Austrian Computer Society and the Swiss Informatics Society for excellent dissertations in computer science.

2024 Received the Heinz Zemanek Prize awarded by the Austrian Computer Society for excellent Austrian dissertations in computer science.

2024 Received the PhD Forum Best Poster Prize at the Design, Automation and Test in Europe (DATE) conference.

2024 Integration of several tools developed as part of the Munich Quantum Toolkit into the PlanQK (another huge German quantum project/initiative) service platform.

2023	Nomination for Best Paper Award at the Asia and South Pacific Design Automation Conference.
2022, 2023	Invited as a mentor to the NYUAD International Hackathon for Social Good in the Arab World in 2022 and 2023 focusing on quantum computing.
2022	Received the "JKU Young Researcher's Award" awarded by the Johannes Kepler University Linz in support of outstanding academic and scientific accomplishments to honor doctoral candidates.
2021	Accepted into the "IBM Qiskit Advocate" program as recognition of my contributions to the community.
2019–2020	Invitation to the IBM Qiskit Camps in Tokio (2019) and New York (2020).
2019–2021	Several top placements at various quantum computing challenges.
2019–present	Several contributions to open-source projects (such as Qiskit, TKET, ...).

Research and Publications

In my work, I am developing software for the computers of the future so that they are as easy to use as the computers we have today. In particular, I develop design automation tools and software for quantum computing—from core methods and data structures to the classical simulation, compilation, or verification of quantum circuits and beyond. My research takes an important step towards avoiding a situation where we have powerful quantum computers, but no means to design suitable applications for them.
For a full list of publications, see `https://www.cda.cit.tum.de/team/burgholzer/`.

Open-Source Software

Everything developed as part of my research is publicly available on GitHub (`https://github.com/cda-tum` as well as `https://github.com/munich-quantum-toolkit`) as part of the *Munich Quantum Toolkit (MQT)*. Tools are generally implemented in C++ to be as performant as possible, but additionally offer push-button solutions via Python bindings to be as accessible as possible at the same time. All modern versions of Python are supported and pre-built binaries for all major platforms are available on PyPI, with more than *two million* downloads according to the PyPI download statistics. Tools natively integrate with IBM Qiskit, are available as services on the PlanQK platform, actively maintained, and well documented.
For a full list of contributions, see `https://github.com/burgholzer`.

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