Postdoctoral Research Position in Quantum–Classical Algorithms

Research Unit Computational Sustainability, Institute of Computer Engineering, TU Wien

The Research Unit for Computational Sustainability invites applications for a postdoctoral research position funded by the project *Quantum Algorithm Engineering: Bridging the Gap to Industrial Applications* (QAE COMET Module), supported by FFG Austria. The successful candidate will conduct research in quantum and quantum–classical algorithms, with the overarching goal of combining quantum computing capabilities with existing high-performance computing (HPC) systems. This is a full-time on-site role located in Vienna, Austria. The candidate will be responsible for developing and optimizing quantum-classical algorithms, conducting experiments, analyzing data, publishing research findings, collaborating with interdisciplinary teams and to (co-)supervise Master and PhD students. The role involves daily interaction with cutting-edge technology and participation in academic discussions and conferences.

Research Topics

Key areas of interest include, but are not limited to:

- Quantum Machine Learning and its interaction with HPC facilities
- Optimization algorithms in hybrid quantum–classical setups (e.g., QAOA)
- Quantum circuit compilation, circuit knitting, with a particular focus on the interaction with HPC facilities

The candidate will actively contribute to the QAE COMET Module and will have the opportunity to develop independent research lines. Collaborating partners include AQT, parityQC, Johannes Kepler Universität Linz (JKU Linz), Technische Universität München (TUM), Oak Ridge National Laboratory (ORNL), TU Delft, and Northwestern University.

Desired Expertise

We seek candidates with Ph.D. in Physics, Computer Science, Mathematics, or a related field, with excellent research, analytical, and problem-solving skills; strong written and verbal communication skills in english; experience in publishing scientific papers at top tier conferences and journals and experience in at least one of the following areas:

- HPC resource allocation
- Hybrid quantum-classical computing, including near term approaches, such as variational computing, as well as the interplay between quantum and classical components
- Quantum optimization (e.g., QAOA, VQE)
- QML (VQA/QNN-based) and (classical) learning theory
- Fault-tolerant quantum algorithms

Experience in data analysis, machine learning, and algorithms & data structures, information theory or computational theory is desirable. Familiarity with at least one quantum programming framework, e.g., qiskit, pennylane, QuTip is desirable.

Position Details

- **Start Date:** Winter 2026 (earlier appointments possible)
- **Duration:** Initial contract of one year, with the possibility of extension up to four years
- **Salary: approx. 4,932.90/month gross, 14 times/year for 40 hours/week**

Application Procedure

Review of applications will begin on a rolling basis and will continue until the position is filled. Applicants should submit the following materials to **Univ. Prof. Dr. Ivona Brandić** at *ivona.brandic@tuwien.ac.at*, email subject: *QAE Post Doc Application*

1. Cover Letter
2. Curriculum Vitae (CV) including a publication list
3. Statement of Research Interests (max. 2 pages)
4. Two Reference Letters

For further inquiries, please contact: **Univ. Prof. Dr. Ivona Brandić** Email: *ivona.brandic@tuwien.ac.at*