Design Automation and Software for
Quantum Computing, Microfluidics, or Conventional Circuits and Systems

Call for Applications: PhD Students and Postdocs

(at the Johannes Kepler University Linz or the Technical University of Munich)

We are an active and lively research group who is passionate about science. We are working in an environment which may best be characterized by the passion to accomplish something new — complemented by teamwork and fostering personal relationships. From assistants, students, researchers, postdocs to professors; we are all working hand in hand, are highly committed, and engaged with our work. We know how to celebrate our successes, but also how to get through setbacks together!

In the next months, we are going to extend our research group at the Johannes Kepler University Linz (www.jku.at). Additionally, we are going to start a new research group at the Technical University Munich (www.tum.de). Accordingly, we are currently searching for PhD Students and Postdocs to join our team!

PhD Students

For PhD students, we are looking for persons that are willing to learn and explore new topics while playing nice in a team. Your main task will be the development, conceptualization, and eventual implementation of new design automation methods and software for your field, e.g., for quantum computing, microfluidics, or conventional circuits and systems. Our focus on interdisciplinary partnerships and networks will enable you to meet many interesting people (at places all over the world) and present your work at top conferences and journals in our field.

Candidates should have completed their Master/Diploma studies in Computer Science, Mathematics, Mechatronics, Electrical Engineering, Physics, or a similar subject and ideally have interest (or even first experiences) in one of our research fields (see below).

Postdocs

For Postdocs, we are particularly looking for experienced persons that already worked in one of our research fields (see below). Your main tasks will be to help us further define our vision, leading projects, and strengthening existing as well as establishing new interdisciplinary cooperations with partners and stakeholders from different domains.

Candidates should have completed their Doctoral studies in Computer Science, Mathematics, Mechatronics, Electrical Engineering, Physics, or a similar subject and ideally have a proven track record in science.

Our Research Fields

We cover a broad range of topics in our work, but have a particular focus on the development of software and methods for the design, verification, and test of circuits and systems for conventional as well as alternative and post-CMOS computing technologies. Besides that, we have successfully applied the methods developed by us in complementary research areas. Currently, we are particularly looking for candidates that strengthen our teams working in the following fields:

- **Quantum Computing:** We do design automation for quantum computers and develop methods and software tools dedicated to the design and realization of quantum algorithms/circuits. We see ourselves as an interface between the stakeholders building physical quantum computers and the ones using them. In this field, we are about to start a visionary and large-scale ERC Consolidator Grant Project and are going to become part of the Munich Quantum Valley-Initiative. For an overview of our previous work, please check out our web pages on software/design automation for quantum computing and our open-source tools which are publicly available at GitHub.
- **Microfluidics:** We develop methods and software tools that aid the design of microfluidic devices (also known as Labs-on-a-Chip). While these devices are mainly designed manually thus far, we investigate methods that eventually will automate crucial design steps. In addition, we are developing simulators (on various abstraction levels; using, e.g., Computational Fluid Dynamics) which enables us to validate designs of microfluidic devices even before the first prototype is fabricated. In this field, we are about to start a consortial project with stakeholders from academia and industry to establish those tools for practical applications. For an overview of our previous work, please check out our web pages on software/design automation for microfluidics.
- **Conventional Circuits and Systems:** We develop methods on various abstraction levels from the initial specification of a system down to its eventual placement and routing. Currently, we put a particular focus on the utilization of methods for Machine Learning, Reinforcement Learning, etc. to tackle the corresponding challenges. For an overview of our interests here, please check out this page.

Join our Team

If you are interested in joining our team (as a PhD student or Postdoc), please do not hesitate to contact us! Currently, we keep the application process rather informal, but obviously would be interested in your CV and background (if applicable, please also add your list of publications, projects, cooperations, etc.). But most importantly, tell us what motivates you to join our team and work on (one of) the research fields outlined above! Let us know why you would be a great candidate! We are looking forward to hearing from you! Please send your application (in English or German) to robert.wille@jku.at.

Contact

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