



Multiple Open Projects (MA, Hiwi)

Quantum Computing Meets Control

Description:

Quantum computers promise to revolutionize computing by efficiently solving previously intractable problems. Recent years have seen tremendous progress on both the experimental realization of quantum computing devices as well as the development and implementation of quantum algorithms. However, current research in quantum computing faces various theoretical and practical challenges, many of which are connected to systems and control theory.

At our institute, we are studying theoretical aspects of quantum computing through the lens of control. Various open research projects are available, including:

Theoretical robustness analysis; Analysis and training of quantum machine learning models; Controller design for quantum systems (e.g., via robust, optimal, or data-driven control); Solving computational control problems on a quantum computer.

Depending on your interest, the project focus could be either more theoretical or focus on implementations in simulation and on a real quantum computer.

Prerequisites:

Solid background in mathematics; Interest in theoretical problems; Prior knowledge in quantum computing not necessary

Supervisor:

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Area:

Quantum computing
Control theory
Robustness

Properties:

Type: MA, Hiwi

20-40% literature
30-60% theory
20-50% implementation

Beginning:

now

Weitere Informationen: www.ist.uni-stuttgart.de/lehre/bama

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