Diagrammatic Quantum Programming

Summary

In recent years much progress has been made in diagrammatic formalisms for quantum foundations (e.g. ZX-calculus) which have now become used in applied areas such as quantum correction. Another strand of research has proposed programming language approaches based on linear variants of lambda calculus. The purpose of this project is to study programming language approaches that take advantage of the intuitive nature of diagrammatic representation of quantum programs while at the same time have the power and flexibility of functional programming paradigms.

Research field:	Information and communication technology
Supervisors:	Prof. Dr. Pawel Maria Sobocinski Prof. Dr. Amar Hadzihasanovic
Availability:	This position is available.
Offered by:	School of Information Technologies Department of Software Science
Application deadline:	Applications are accepted between June 01, 2023 00:00 and June 30, 2023 23:59 (Europe/Zurich)

Description

The applicant should have a Masters degree in computer science, physics or mathematics and will be familiar with the foundations of quantum computing, programming language theory and technology and have some experience with category theory.

This is a project that will combine theoretical research with practical programming language development. It is expected that the project will produce top-quality publications at venues such as QPL, LiCS and PoPL.

Supervisor: Paweł Sobociński
Co-supervisor: Amar Hadzihasanovic

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