Quantum Computing Seminar

Categorical treatment of the Deutsch-Jozsa algorithm

By

Selman Ipek
(Bilkent University)

Abstract: The Deutsch-Jozsa problem is a canonical example of a problem that can be solved by a quantum computer exponentially faster than a classical deterministic computer. Here we begin by describing the Deutsch-Jozsa problem and its solution according to standard quantum theory [1, §I.B]. We then describe how the solution works in categorical terms by building off of the notion of complementary structures and Frobenius algebras built up in the previous talks.

References:
1. Vicary, Jamie. Topological structure of quantum algorithms. arXiv preprint arXiv:1209.3917 (2013).
2. Heunen, Chris, and Jamie Vicary. Categories for Quantum Theory: an introduction. Oxford University Press, 2019. Chapter 6

Date: Friday, April 19, 2024
Time: 14:00
Place: SA141 - Mathematics Seminar Room & ZOOM

To request the event link, please send a message to selman.ipek@bilkent.edu.tr