

Keshavarz-Kohjerdi, Fatemeh; Bagheri, Alireza

A linear-time algorithm for finding Hamiltonian (s, t) -paths in even-sized rectangular grid graphs with a rectangular hole. (English) [Zbl 1371.05287](#)

Theor. Comput. Sci. 690, 26-58 (2017).

Summary: The Hamiltonian path problem for general grid graphs is NP-complete. In this paper, we give the necessary conditions for the existence of a Hamiltonian path between two given vertices in a rectangular grid graph with a rectangular hole; where the size of graph is even. In addition, we show that the Hamiltonian path in these graphs can be computed in linear-time.

MSC:

[05C85](#) Graph algorithms (graph-theoretic aspects)

[05C45](#) Eulerian and Hamiltonian graphs

[05C38](#) Paths and cycles

[68Q25](#) Analysis of algorithms and problem complexity

Cited in **3** Documents

Keywords:

grid graph; Hamiltonian path; Hamiltonian cycle; rectangular grid graphs with a rectangular hole; NP-completeness

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