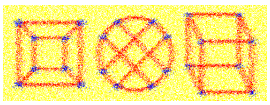
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Special Issue on Selected Papers from the 18th International Conference and Workshops on Algorithms and Computation (WALCOM 2024) Guest Editors' Foreword

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1 Introduction

The 18th International Conference and Workshops on Algorithms and Computation (WALCOM 2024) was held at Kanazawa Bunka Hall, Kanazawa, Japan, during March 18 - March 20, 2024. WALCOM 2024 featured 2 invited talks and 28 regular presentations, covering a wide range of topics in algorithms and computation. The proceedings of WALCOM 2024 was published by Springer as Volume 14549 of the LNCS series.

This special issue features four contributed papers selected from those presented at WALCOM 2024. Conforming to the high standard expected for JGAA, a stringent review process was adopted in the preparation of this special issue. Each submission was reviewed by at least two reviewers, who carefully provided constructive comments on the scientific quality of the paper.

In the paper by Caroppo, Da Lozzo, and Di Battista, the authors initiate the study of quantum algorithms in the Graph Drawing research area by investigating two foundational drawing standards, namely, 2-level drawings and book layouts, in both the quantum circuit and the quantum annealing models of computation. An algorithmic framework built upon Grover's quantum search achieves a quadratic speedup compared to the best classical exact algorithms. Experiment results using the D-Wave quantum annealing platform for two-level crossing minimization are rather promising, suggesting that quantum annealing is highly suitable for addressing graph drawing problems.

The enumeration of graph orientations has received considerable attention in the literature. The paper by Da Lozzo, Di Battista, Frati, Grosso, and Patrignani proposes efficient algorithms for enumerating two fundamental combinatorial structures of maximal planar graphs, i.e., canonical orderings and Schnyder woods, and the corresponding canonical drawings and Schnyder drawings, respectively. All the enumeration algorithms take linear setup time, space usage, and worst-case delay. Aside from their theoretical interest and importance, graph drawing enumeration algorithms

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have potential applications in graph drawing software, machine-learning-based graph drawing tools, computer-aided systems and more.

Hub Labeling provides a state-of-the-art technique for accelerating shortest path computation in applications such as road networks. The paper by Cauvi, Li, and Storandt is concerned with designing exact and approximation algorithms for variants of Hierarchical Hub Labeling (HHL). Aside from yielding provable guarantees (on both running time and approximation factor) of HHL algorithms on general graphs as well as on trees, experimental results also show that existing methods for HHL are noticeably outperformed by the proposed new algorithms.

One of the fundamental problems in the domain of mobile agents is the exploration of networks. In the paper by Bhattacharya, Italiano, and Mandal, the authors investigate the problem of searching a dangerous stationary vertex (called a black hole) in a graph network that has the ability to eliminate any visiting agent without leaving any trace of its existence. By focusing on dynamic cactus graphs, lower and upper bounds (parameterized by the number of dynamic edges) on the numbers of agents, rounds and moves are established in search of a black hole in the cactus graph.

We thank all authors who submitted papers for consideration in this special issue. We are indebted to many of the PC members of WALCOM 2024 and several external referees for their careful and critical evaluation of the submitted manuscripts. We also thank the editorial staff of the Journal of Graph Algorithms and Applications for their support in making this special issue possible.