IJARSCT



International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 3, Issue 2, August 2023

Hamiltonian Cycle and Hamiltonian Path and its Applications-A Review

Shidharshekhar Neelannavar¹, Meenakshi H¹, Madhu N R¹, Reshma R¹

Department of Mathematics, R L Jalappa Institute of Technology, Doddaballapur, India ¹ Corresponding author: sshekharn1@gmail.com

Abstract: Hamiltonian cycle and Hamiltonian path are fundamental graph theory concepts that have significant implications in various real-world applications. This paper provides an overview of these concepts, their characteristics, and the practical domains where they find valuable applications

Keywords: Hamiltonian cycle, Hamiltonian path

REFERENCES

- [1]. Medvedev, Paul, and Mihai Pop. "What do Eulerian and Hamiltonian cycles have to do with genome assembly?." PLoS Computational Biology 17, no. 5 (2021): e1008928.
- [2]. Garrod, Claude. "Hamiltonian path-integral methods." Reviews of Modern Physics 38, no. 3 (1966): 483.
- [3]. R. Murali and K.S. Harinath, 1999, Hamiltonian-n*-laceable graphs, Far East Journal of Applied Mathematics, 3(1), pp. 69-84.
- [4]. Girisha A et al., Laceability properties in flower snark graphs, Advances and Applications in Discrete Mathematics Volume 22, Issue 1, Pages 55 65 (September 2019)
- [5]. Shashidhar Shekhar Neelannavar and Girisha A "Hypo-edge-Hamiltonian laceability in graphs" Journal of physics: Conference Series, Volume 1597, Aug 2020, ISSN 1742-6588.
- [6]. Isaacs R. Infinite families of nontrivial trivalent graphs which are not Tait colorable. Amer Math Monthly, 1975, 82: 221–239.
- [7]. Bramel, Julien, and David Simchi-Levi. "The logic of logistics: theory, algorithms, and applications for logistics management." (1997).
- [8]. Çakir, Esra, Ziya Ulukan, and TankutAcarman. "Shortest fuzzy hamiltonian cycle on transportation network using minimum vertex degree and time-dependent dijkstra's algorithm." IFAC-PapersOnLine 54, no. 2 (2021): 348-353.
- [9]. Chen, Shao Dong, Hong Shen, and Rodney Topor. "An efficient algorithm for constructing Hamiltonian paths in meshes." Parallel Computing 28, no. 9 (2002): 1293-1305.
- [10]. Bae, Yongeun, Chunkyun Youn, and Ilyong Chung. "Application of the Hamiltonian Circuit Latin square to the parallel routing algorithm on 2-circulant networks." In Computational and Information Science: First International Symposium, CIS 2004, Shanghai, China, December 16-18, 2004. Proceedings 1, pp. 219-224. Springer Berlin Heidelberg, 2005.
- [11]. Leite, Jônatas Boás, and José Roberto Sanches Mantovani. "Distribution system state estimation using the Hamiltonian cycle theory." IEEE Transactions on Smart Grid 7, no. 1 (2015): 366-375.
- [12]. Girard, Patrick, Christian Landrault, Serge Pravossoudovitch, and Daniel Severac. "Reducing power consumption during test application by test vector ordering." In 1998 IEEE International Symposium on Circuits and Systems (ISCAS), vol. 2, pp. 296-299. IEEE, 1998.
- [13]. Formanowicz, Piotr, Marta Kasprzak, and Piotr Wawrzyniak. "Labeled Graphs in Life Sciences—Two Important Applications." Graph-Based Modelling in Science, Technology and Art (2022): 201-217.
- [14]. Dykeman, Eric C., Peter G. Stockley, and Reidun Twarock. "Packaging signals in two single-stranded RNA viruses imply a conserved assembly mechanism and geometry of the packaged genome." Journal of molecular biology 425, no. 17 (2013): 3235-3249.

DOI: 10.48175/IJARSCT-12766



IJARSCT



International Journal of Advanced Research in Science, Communication and Technology (IJARSCT)

International Open-Access, Double-Blind, Peer-Reviewed, Refereed, Multidisciplinary Online Journal

Volume 3, Issue 2, August 2023

- [15]. Nedjatia, Arman, and Béla Vizvárib. "Robot path planning by traveling salesman problem with circle neighborhood: Modeling, algorithm, and applications." arXiv preprint arXiv:2003.06712 (2020).
- [16]. Yu, Zhong, Liang Jinhai, Gu Guochang, Zhang Rubo, and Yang Haiyan. "An implementation of evolutionary computation for path planning of cooperative mobile robots." In Proceedings of the 4th World Congress on Intelligent Control and Automation (Cat. No. 02EX527), vol. 3, pp. 1798-1802. IEEE, 2002.
- [17]. Kader, Issam Abdel. "Path partition in directed graph-modeling and optimization." New Trends in Mathematical Sciences 1, no. 1 (2013): 74-84.
- [18]. Ikebe, Yoshiko T., and Akihisa Tamura. "Construction of Hamilton Path Tournament Designs." Graphs and Combinatorics 27 (2011): 703-711.
- [19]. Buro, Michael. "Simple Amazons endgames and their connection to Hamilton circuits in cubic subgrid graphs." In Computers and Games: Second International Conference, CG 2000 Hamamatsu, Japan, October 26–28, 2000 Revised Papers 2, pp. 250-261. Springer Berlin Heidelberg, 2001.
- [20]. Nagarajan, Niranjan, and Mihai Pop. "Parametric complexity of sequence assembly: theory and applications to next generation sequencing." Journal of computational biology 16, no. 7 (2009): 897-908.
- [21]. Ashton, Banda. "Graph Theory in DNA Sequencing: Unveiling Genetic Patterns." International Journal of Biology and Life Sciences 3, no. 1 (2023): 9-13.
- [22]. Trujillo Achury, Miller Andrés. "The Hamiltonian path problem applied to genomes assembly." (2019).
- [23]. Boev, A. S., A. S. Rakitko, S. R. Usmanov, A. N. Kobzeva, I. V. Popov, V. V. Ilinsky, E. O. Kiktenko, and A. K. Fedorov. "Genome assembly using quantum and quantum-inspired annealing." Scientific Reports 11, no. 1 (2021): 13183.
- [24]. Laporte, Gilbert, Ardavan Asef-Vaziri, and Chelliah Sriskandarajah. "Some applications of the generalized travelling salesman problem." Journal of the Operational Research Society 47 (1996): 1461-1467.
- [25]. Farahani, Reza Zanjirani, ed. Graph Theory for Operations Research and Management: Applications in Industrial Engineering: Applications in Industrial Engineering. IGI Global, 2012.

DOI: 10.48175/IJARSCT-12766

