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Application of shortest path problem in the university campus using Dijkstra's algorithm

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Abstract

The university campus site is usually widespread, and the location of one office or facility is relatively far from each other. Therefore, determining the shortest path from one point to another is crucial as it can save time and other valuable resources, especially for university students. This study is designed to analyse the network model of the university campus layout and establish the shortest path between a starting point and a destination in the university campus network by using Dijkstra's algorithm. This study examines the algorithm to find the shortest path from an origin at a student residential site to the destination point at the main library on the IIUM Kuantan campus. The experimental result by using Dijkstra's algorithm gives the shortest path that the students can travel from their residence at Mahallah Fatimah az-Zahra to the Dar al-Hikmah Library across the Kulliyyah of Allied Health Sciences. © 2023 Author(s).

References

- Irnich, S., Desaulniers, G.
(2005) *Column Generation*, pp. 33-65.
Springer, Boston, MA
- Dijkstra, E.W.
(1959) *Numer. Math.*, 1, pp. 269-271.
- Sunita, Garg, D.
(2021) *Journal of King Saud University-Computer and Information Sciences*, 33, pp. 364-373.
- Sedeño-Noda, A., Colebrook, M.
(2019) *European J. Oper. Res.*, 276 (1), pp. 106-118.
- Casas, P.M.D.L., Sedeno-Noda, A., Borndorfer, R.
(2021) *Computers and Operations Research*, 135 (105424), pp. 1-14.
- Ojekudo, N.A., Akpan, N.P.
(2017) *IOSR Journal of Mathematics (IOSR-JM)*, 13 (3), pp. 20-32.
1
- Orhani, S.
(2022) *Middle European Scientific Bulletin*, 25, pp. 247-254.
- Sebayang, V.N.C., Rosyida, I.
Implementations of Dijkstra Algorithm for Searching the Shortest Route of Ojek Online and a Fuzzy Inference System for Setting the Fare Based on Distance and Difficulty of Terrain (Case Study: In Semarang City, Indonesia)
(2022) *International Conference on Mathematics, Geometry, Statistics, and Computation (IC-MaGeStiC 2021)*, pp. 76-84.
Atlantis Press
- Botsis, D., Panagiotopoulos, E.
(2021), 6 (1), pp. 33-42.

- Deepa, G., Kumar, P., Manimaran, A., Rajakumar, K., Krishnamoorthy, V.
(2018) *International Journal of Engineering & Technology*, 7 (4.10), pp. 974-976.
- Suardinata, S., Rusmi, R., Lubis, M.A.
(2022) *Sistemasi: Jurnal Sistem Informasi*, 11 (2), pp. 496-505.
- Koritsoglou, K., Tsoumanis, G., Patras, V., Fudos, I.
(2022) *Information.*, 13 (6), p. 269.
- Taha, H.A.
(2017) *Operations Research An Introduction*, pp. 255-261.
Pearson Education, Harlow, England

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