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<https://doi.org/10.1016/j.jhydrol.2025.134557>

- Ebid, A. M., Abdel-Kader, M. Y., Mahdi, I. M., & Abdel-Rasheed, I. (2024). Ant Colony Optimization based algorithm to determine the optimum route for overhead power transmission lines. *Ain Shams Engineering Journal*, 15(1), 102344. <https://doi.org/10.1016/j.asej.2023.102344>
- Farhadi, U., Hess, H., Maoudj, A., & Christensen, A. L. (2025). Evolution of path costs for efficient decentralized multi-agent pathfinding. *Swarm and Evolutionary Computation*, 93, 101833. <https://doi.org/10.1016/j.swevo.2024.101833>
- Foead, D., Ghifari, A., Kusuma, M. B., Hanafiah, N., & Gunawan, E. (2021). A Systematic Literature Review of A-STAR Pathfinding. *Procedia Computer Science*, 179, 507–514. <https://doi.org/10.1016/j.procs.2021.01.034>
- Guo, L., Chen, Y., Gao, J., Ren, J., & Gao, Y. (2026). DLVG-TDA-STAR: A dual layer vectorized graph framework and time-dependent A-STAR algorithm for ship route optimization. *Ocean Engineering*, 355, 125027. <https://doi.org/10.1016/j.oceaneng.2026.125027>
- Hemmati, R., Hooshmand, R., & Khodabakhshian, A. (2013). Comprehensive review of generation and transmission expansion planning. *IET Generation, Transmission & Distribution*, 7(9), 955–964. <https://doi.org/10.1049/iet-gtd.2013.0031>
- Hu, Y., Bie, Z., Ding, T., & Lin, Y. (2016a). An NSGA-II based multi-objective optimization for combined gas and electricity network expansion planning. *Applied Energy*, 167, 280–293. <https://doi.org/10.1016/j.apenergy.2015.10.148>
- Hu, Y., Bie, Z., Ding, T., & Lin, Y. (2016b). An NSGA-II based multi-objective optimization for combined gas and electricity network expansion planning. *Applied Energy*, 167, 280–293. <https://doi.org/10.1016/j.apenergy.2015.10.148>



- Vehicle) Fotogrametri Untuk Perencanaan Pengembangan Jalur Transmisi SUTET 500 kV (Studi Kasus: Kec. Ambarawa, Kab. Semarang). *Jurnal Geodesi Undip*, 7, 182.
- Jiang, S., Zheng, J., Du, L., Su, S., & Tan, H. (2025). Distribution network path planning method and system based on artificial intelligence optimization algorithm. *Discover Applied Sciences*, 7(10), 1074. <https://doi.org/10.1007/s42452-025-07699-3>
- Kalay, M. U. (2022). Novel approaches on bulk-loading of large scale spatial datasets. *Concurrency and Computation: Practice and Experience*, 34(9), e6596. <https://doi.org/10.1002/cpe.6596>
- Kuo, R. J., Edbert, E., Zulvia, F. E., & Lu, S.-H. (2023). Applying NSGA-II to vehicle routing problem with drones considering makespan and carbon emission. *Expert Systems with Applications*, 221, 119777. <https://doi.org/10.1016/j.eswa.2023.119777>
- Liu, Y., Peng, M., Gao, X., & Zhang, H. (2021). Probabilistic Vulnerability Assessment of Transmission Lines Considering Cascading Failures. *Processes*, 9(11), 1994. <https://doi.org/10.3390/pr9111994>
- Mathew, G. E. (2015). Direction Based Heuristic for Pathfinding in Video Games. *Procedia Computer Science*, 47, 262–271. <https://doi.org/10.1016/j.procs.2015.03.206>
- Otaïr, M. (2013). Approximate K-Nearest Neighbour Based Spatial Clustering Using K-D Tree. *International Journal of Database Management Systems*, 5(1), 97–108. <https://doi.org/10.5121/ijdms.2013.5108>
- P., A. P., & R., R. (2026). Optimization of electric vehicle routing: A multi-criteria intelligent decision framework for efficient and scalable mobility. *Energy Reports*, 15, 108912. <https://doi.org/10.1016/j.egyr.2025.12.049>
- Pinkham, R., Zeng, S., & Zhang, Z. (2020). QuickNN: Memory and Performance Optimization of k-d Tree Based Nearest Neighbor Search for 3D Point Clouds. *2020 IEEE*

192. <https://doi.org/10.1109/HPCA47549.2020.00024>

- Pradana, D. A., & Cahyono, B. K. (2022). Perencanaan Rute dan Desain Lendutan Kabel Listrik untuk Jalur Transmisi dari PLTS Apung Kutai Lama ke Gardu Induk PLN Sambutan Samarinda. *JGISE: Journal of Geospatial Information Science and Engineering*, 5(2), 48. <https://doi.org/10.22146/jgise.68527>
- Qin, Y., Li, Z., Ding, J., Zhao, F., & Meng, M. (2023). Automatic optimization model of transmission line based on GIS and genetic algorithm. *Array*, 17, 100266. <https://doi.org/10.1016/j.array.2022.100266>
- Rahma, B. R. F., & Hariyanto, T. (2008). STUDI ALTERNATIF PENENTUAN JALUR BARU SUTET – PLN MENGGUNAKAN FOTO UDARA DAN ANALISA GIS. *Geoid*, 3(2), 159–170.
- Salama, S. W. (2024). Towards advanced sustainable criteria for choosing the best site for collecting solar energy in cities using multi-criteria GIS. *City, Territory and Architecture*, 11(1), 22. <https://doi.org/10.1186/s40410-024-00243-7>
- Santos, A. H. M., De Lima, R. M., Pereira, C. R. S., Osis, R., Medeiros, G. O. S., De Queiroz, A. R., Flauzino, B. K., Cardoso, A. R. P. C., Czank Junior, L., Dos Santos, R. A., & Carvalho Junior, E. L. (2019). Optimizing routing and tower spotting of electricity transmission lines: An integration of geographical data and engineering aspects into decision-making. *Electric Power Systems Research*, 176, 105953. <https://doi.org/10.1016/j.epsr.2019.105953>
- Schito, J. (2017a). Modeling and optimizing transmission lines with GIS and Multi-Criteria Decision Analysis. *It - Information Technology*, 59(1), 1–9. <https://doi.org/10.1515/itit-2016-0057>



Decision Analysis. *It - Information Technology*, 59(1), 1–9. <https://doi.org/10.1515/itit-2016-0057>

Schito, J., Moncecchi, D., & Raubal, M. (2021). Determining transmission line path alternatives using a valley-finding algorithm. *Computers, Environment and Urban Systems*, 86, 101571. <https://doi.org/10.1016/j.compenvurbsys.2020.101571>

Sharma, H., Galván, E., & Mooney, P. (2025). A parallel genetic algorithm for multi-criteria path routing on complex real-world road networks. *Applied Soft Computing*, 170, 112559. <https://doi.org/10.1016/j.asoc.2024.112559>

Silaban, J. F. R. (2024). PENENTUAN ALTERNATIF JALUR SALURAN UDARA TEGANGAN TINGGI (SUTT) 150 KV JERANJANG – SEKOTONG DI SISTEM KELISTRIKAN LOMBOK – NUSA TENGGARA BARAT. *Jurnal Multidisiplin Saintek*, 2, 86.

Thakur, K., Maity, S., Nielsen, P., Pal, T., & Maiti, M. (2024). A 3D multiobjective multi-item eco-routing problem for refrigerated fresh products delivery using NSGA-II with hybrid chromosome. *Computers & Industrial Engineering*, 198, 110644. <https://doi.org/10.1016/j.cie.2024.110644>

Tran, T. T., Browne, T., Musharraf, M., & Veitch, B. (2023). Pathfinding and optimization for vessels in ice: A literature review. *Cold Regions Science and Technology*, 211, 103876. <https://doi.org/10.1016/j.coldregions.2023.103876>

Wang, B., Hua, C., Luo, H., Suo, B., & Zu, G. (2024). Research on transmission line path planning model based on TFN-AHP and ACO. *IET Generation, Transmission & Distribution*, 18(13), 2373–2381. <https://doi.org/10.1049/gtd2.13208>



route planning method for polar sea based on the NSGA-III algorithm. *Ocean Engineering*, 343, 123199. <https://doi.org/10.1016/j.oceaneng.2025.123199>

Weng, F., Su, M., Hajek, P., & Abedin, M. Z. (2026). A multi-objective framework for predicting public opinion trends on infectious diseases using NSGA-II and interval predictions. *Expert Systems with Applications*, 298, 129583. <https://doi.org/10.1016/j.eswa.2025.129583>

Xu, T., Wang, T., Ye, C., Zhang, J., Xi, P., Chen, Y., & Zhang, G. (2023). Research of Electric Cable Path Planning Based on Heuristic Optimization Algorithm in Mixed-Land Scenario. *Energy Engineering*, 120(11), 2629–2650. <https://doi.org/10.32604/ee.2023.027537>

Yu, Z., Cui, D., Zhu, Y., Zhou, K., Zhang, Z., & Li, Y. (2025). Precise path planning based on improved A-STAR and DWA algorithms for complex agricultural environments. *Information Processing in Agriculture*, S2214317325000630. <https://doi.org/10.1016/j.inpa.2025.11.001>

Zhang, A., Li, C., & Bi, W. (2016). Rectangle expansion A* pathfinding for grid maps. *Chinese Journal of Aeronautics*, 29(5), 1385–1396. <https://doi.org/10.1016/j.cja.2016.04.023>

Zhang, C., Hu, Q., Tu, J., Dong, Y., Tan, Y., & He, Y. (2025). A*-plus path planning algorithm for large-scale grid maps. *Array*, 28, 100593. <https://doi.org/10.1016/j.array.2025.100593>

Zhang, R., Guo, H., Andriukaitis, D., Li, Y., Królczyk, G., & Li, Z. (2024). Intelligent path planning by an improved RRT algorithm with dual grid map. *Alexandria Engineering Journal*, 88, 91–104. <https://doi.org/10.1016/j.aej.2023.12.044>



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Optimasi Perencanaan Jalur Transmisi Saluran Udara Tegangan Tinggi 150 kV Berbasis Geographic Information System Menggunakan Metode Hybrid Algoritma A-Star dan Non-Dominated Sorting Genetic Algorithm II

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Zhao, I., Wang, X., Zhang, S., Du, Y., Xu, J., & He, S. (2025). Research on multi-objective

optimal route selection method for natural gas transmission pipeline. *Journal of Pipeline*

Science and Engineering, 5(3), 100250. <https://doi.org/10.1016/j.jpse.2024.100250>