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Models and Heuristic Algorithms for Solving Discrete Location Problems of Temporary Disposal Places in Palembang City

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Abstract

The discrete location problem has given more attention to operations research as the prevalent location-allocation problem in recent years. Discrete location problems have three main classifications: covering-based, median-based, and some different problems. An open facility location must cover demand in terms of range or travelled period in covering-based problems. The prospective site must cover all request points at the network centre in median-based problems. These problem categories are suitable for determining the public facility's location. There are very few literature reviews and models related to location-allocation theory. This paper aims to present detailed calculations or numerical methods computations and an overview of the studies, types, models, and previous researchers' methods to solve discrete location problems. We describes the set covering location problems, maximal covering location problems, p-center location problems, p-median location problems, and fixed charge facility locations problems. This paper also briefly explains several heuristic algorithms to solve discrete location problems, such as genetic algorithm, particle swarm optimization, and greedy reduction algorithm. We implemented the model and algorithm to determine the optimal temporary disposal

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 Octarina, S. , Puspita, F.M. , Supadi, S.S. (2022) *Science and Technology Indonesia*

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-
- 1 Ruston, G.
(1979) *Optimal Location of Facilities*, p. 2020. Cited 28 times.
[1]
-
- 2 Ahmadi-Javid, A., Seyedi, P., Syam, S.S.
A survey of healthcare facility location

(2017) *Computers and Operations Research*, 79, pp. 223-263. Cited 322 times.
www.elsevier.com/inca/publications/store/3/0/0/
doi: 10.1016/j.cor.2016.05.018

[View at Publisher](#)
-
- 3 Kinay, Ö.B., Saldanha-da-Gama, F., Kara, B.Y.
On multi-criteria chance-constrained capacitated single-source discrete facility location problems

(2019) *Omega (United Kingdom)*, 83, pp. 107-122. Cited 37 times.
<https://www.sciencedirect.com/journal/omega>
doi: 10.1016/j.omega.2018.02.007

[View at Publisher](#)
-
- 4 Tamir, A.
The k-centrum multi-facility location problem

(2001) *Discrete Applied Mathematics*, 109 (3), pp. 293-307. Cited 65 times.
doi: 10.1016/S0166-218X(00)00253-5

[View at Publisher](#)
-
- 5 Wolf, G. W.
Location covering models: history, applications and advancements (Advances in Spatial Science)
(2019) *Int. J. Geogr. Inf Sci*, 33 (11), pp. 2334-2335. Cited 2 times.
[5]
-

- 6 Xie, C.
Research on Logistics Facilities Location Based on GIS
(2018) Proceedings - 2nd International Conference on Data Science and Business Analytics, ICDSBA 2018, art. no. 8588943, pp. 358-361. Cited 5 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8588452>
ISBN: 978-153868431-3
doi: 10.1109/ICDSBA.2018.00074
View at Publisher
-
- 7 Ye, H., Kim, H.
Locating healthcare facilities using a network-based covering location problem
(2016) GeoJournal, 81 (6), pp. 875-890. Cited 24 times.
<http://www.kluweronline.com/issn/0343-2521/>
doi: 10.1007/s10708-016-9744-9
View at Publisher
-
- 8 Zhang, B., Peng, J., Li, S.
Covering location problem of emergency service facilities in an uncertain environment (Open Access)
(2017) Applied Mathematical Modelling, 51, pp. 429-447. Cited 76 times.
www.elsevier.com/locate/journal/apm
doi: 10.1016/j.apm.2017.06.043
View at Publisher
-
- 9 Paul, J.A., Hariharan, G.
Location-allocation planning of stockpiles for effective disaster mitigation
(2012) Annals of Operations Research, 196 (1), pp. 469-490. Cited 53 times.
doi: 10.1007/s10479-011-1052-7
View at Publisher
-
- 10 Basu, S., Sharma, M., Ghosh, P.S.
Metaheuristic applications on discrete facility location problems: a survey
(2015) OPSEARCH, 52 (3), pp. 530-561. Cited 39 times.
<http://www.springer.com/business+%26+management/operations+research/journal/12597>
doi: 10.1007/s12597-014-0190-5
View at Publisher
-
- 11 Ghasemi, T., Razzazi, M.
Analysis of a first-fit algorithm for the capacitated unit covering problem
(2017) International Journal of Computer Mathematics, 94 (7), pp. 1375-1389. Cited 2 times.
www.tandf.co.uk/journals/titles/00207160.asp
doi: 10.1080/00207160.2016.1190834
View at Publisher

- 12 Fischetti, M., Ljubic, I., Sinnl, M.
Redesigning benders decomposition for large-scale facility location ([Open Access](#))

(2017) *Management Science*, 63 (7), pp. 2146-2162. Cited 119 times.
<http://pubsonline.informs.org/doi/pdf/10.1287/mnsc.2016.2461>
doi: 10.1287/mnsc.2016.2461

View at Publisher
-
- 13 Yadav, V., Bhurjee, A.K., Karmakar, S., Dikshit, A.K.
A facility location model for municipal solid waste management system under uncertain environment

(2017) *Science of the Total Environment*, 603-604, pp. 760-771. Cited 77 times.
www.elsevier.com/locate/scitotenv
doi: 10.1016/j.scitotenv.2017.02.207

View at Publisher
-
- 14 Martins de Sá, E., Morabito, R., de Camargo, R.S.
Benders decomposition applied to a robust multiple allocation incomplete hub location problem

(2018) *Computers and Operations Research*, 89, pp. 31-50. Cited 70 times.
www.elsevier.com/inca/publications/store/3/0/0/
doi: 10.1016/j.cor.2017.08.001

View at Publisher
-
- 15 Corberán, Á., Landete, M., Peiró, J., Saldanha-da-Gama, F.
The facility location problem with capacity transfers ([Open Access](#))

(2020) *Transportation Research Part E: Logistics and Transportation Review*, 138, art. no. 101943. Cited 16 times.
<https://www.sciencedirect.com/journal/transportation-research-part-e-logistics-and-transportation-review>,
doi: 10.1016/j.tre.2020.101943

View at Publisher
-
- 16 Fischetti, M., Monaci, M.
A branch-and-cut algorithm for Mixed-Integer Bilinear Programming ([Open Access](#))

(2020) *European Journal of Operational Research*, 282 (2), pp. 506-514. Cited 21 times.
<https://www.journals.elsevier.com/european-journal-of-operational-research/>
doi: 10.1016/j.ejor.2019.09.043

View at Publisher
-
- 17 Du, B., Zhou, H., Leus, R.
A two-stage robust model for a reliable p-center facility location problem

(2020) *Applied Mathematical Modelling*, Part 1 77, pp. 99-114. Cited 37 times.
www.elsevier.com/inca/publications/store/5/2/4/9/9/8/
doi: 10.1016/j.apm.2019.07.025

View at Publisher
-

- 18 Silva, R.M.A., Ramalho, G.L.
Ant system for the set covering problem

(2001) *Proceedings of the IEEE International Conference on Systems, Man and Cybernetics*, 5, pp. 3129-3133. Cited 23 times.
doi: 10.1109/ICSMC.2001.971999
[View at Publisher](#)
-
- 19 Iwamura, K., Horiike, M., Matsuzawa, M.
Benchmark data set with service programs to approximately solve the set covering problem ([Open Access](#))

(2005) *Journal of Interdisciplinary Mathematics*, 8 (3), pp. 449-468.
doi: 10.1080/09720502.2005.10700420
[View at Publisher](#)
-
- 20 Lust, T., Tuyttens, D.
Two-phase pareto local search to solve the biobjective set covering problem

(2013) *Proceedings - 2013 Conference on Technologies and Applications of Artificial Intelligence, TAAI 2013*, art. no. 6783904, pp. 397-402. Cited 6 times.
doi: 10.1109/TAAI.2013.85
[View at Publisher](#)
-
- 21 Pereira, J., Averbakh, I.
The Robust Set Covering Problem with interval data

(2013) *Annals of Operations Research*, 207 (1), pp. 217-235. Cited 37 times.
doi: 10.1007/s10479-011-0876-5
[View at Publisher](#)
-
- 22 Crawford, B., Soto, R., Berrios, N., Olgúin, E., Misra, S.
Cat swarm optimization with different transfer functions for solving set covering problems ([Open Access](#))

(2016) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, Part V 9790, pp. 228-240. Cited 4 times.
<http://springerlink.com/content/0302-9743/copyright/2005/>
ISBN: 978-331942091-2
doi: 10.1007/978-3-319-42092-9_18
[View at Publisher](#)
-
- 23 Octarina, S., Juita, D.G., Eliyati, N., Bangun, P.B.J.
Set Covering Model in Solving Multiple Cutting Stock Problem ([Open Access](#))

(2020) *Science and Technology Indonesia*, 5 (4), pp. 121-130. Cited 7 times.
<https://sciencetechindonesia.com/index.php/jsti/article/view/239/155>
doi: 10.26554/sti.2020.5.4.121-130
[View at Publisher](#)
-
- 24 Al-Shihabi, S., Arafah, M., Barghash, M.
An improved hybrid algorithm for the set covering problem

(2015) *Computers and Industrial Engineering*, 85, pp. 328-334. Cited 17 times.
doi: 10.1016/j.cie.2015.04.007
[View at Publisher](#)
-

- 25 Weerasena, L., Wiecek, M.M., Soylu, B.
An algorithm for approximating the Pareto set of the multiobjective set covering problem
(2017) *Annals of Operations Research*, 248 (1-2), pp. 493-514. Cited 14 times.
<http://www.kluweronline.com/issn/0254-5330>
doi: 10.1007/s10479-016-2229-x
View at Publisher
-
- 26 Astorga, G., Crawford, B., Soto, R., Monfroy, E., García, J., Cortes, E.
A meta-optimization approach to solve the set covering problem
(2018) *Ingeniería*, 23 (3), pp. 274-288. Cited 21 times.
[26]
-
- 27 Sitepu, R., Puspita, F.M., Romelda, S., Fikri, A., Susanto, B., Kaban, H.
Set covering models in optimizing the emergency unit location of health facility in Palembang
(2019) *Journal of Physics: Conference Series*, 1282 (1), art. no. 012008. Cited 13 times.
<http://iopscience.iop.org/journal/1742-6596>
doi: 10.1088/1742-6596/1282/1/012008
View at Publisher
-
- 28 Octarina, S., Puspita, F.M., Supadi, S.S.
The greedy randomized adaptive search procedure method in formulating set covering model on cutting stock problem
(2020) *Journal of Physics: Conference Series*, 1663 (1), art. no. 012062. Cited 3 times.
<http://iopscience.iop.org/journal/1742-6596>
doi: 10.1088/1742-6596/1663/1/012062
View at Publisher
-
- 29 Davari, S., Fazel Zarandi, M.H., Hemmati, A.
Maximal covering location problem (MCLP) with fuzzy travel times (Open Access)
(2011) *Expert Systems with Applications*, 38 (12), pp. 14535-14541. Cited 59 times.
doi: 10.1016/j.eswa.2011.05.031
View at Publisher
-
- 30 Kim, S.
Direction finder deployment based on the partial set multi-cover problem (Open Access)
(2019) *International Journal of Management Science and Engineering Management*, 14 (2), pp. 94-101.
<http://www.tandfonline.com/loi/tmse20>
doi: 10.1080/17509653.2018.1500952
View at Publisher
-
- 31 Gazani, M.H., Akhavan Niaki, S.A., Akhavan Niaki, S.T.
The capacitated maximal covering location problem with heterogeneous facilities and vehicles and different setup costs: An effective heuristic approach
(2020) *International Journal of Industrial Engineering Computations*, 12 (1), pp. 79-90. Cited 9 times.
http://www.growingscience.com/ijiec/Vol12/IJIEC_2020_20.pdf
doi: 10.5267/j.ijiec.2020.9.002
View at Publisher

- 32 Cordeau, J.-F., Furini, F., Ljubić, I.
Benders decomposition for very large scale partial set covering and maximal covering location problems ([Open Access](#))

(2019) *European Journal of Operational Research*, 275 (3), pp. 882-896. Cited 61 times.
<https://www.journals.elsevier.com/european-journal-of-operational-research/>
doi: 10.1016/j.ejor.2018.12.021

View at Publisher
-
- 33 Amarilies, H.S., Perwira Redi, A.A.N., Mufidah, I., Nadlifatin, R.
Greedy Heuristics for the Maximum Covering Location Problem: A case study of Optimal Trashcan Location in Kampung Cipare-Tenjo-West Java

(2020) *IOP Conference Series: Materials Science and Engineering*, 847 (1), art. no. 012007. Cited 7 times.
<https://iopscience.iop.org/journal/1757-899X>
doi: 10.1088/1757-899X/847/1/012007

View at Publisher
-
- 34 Sandoval, M.G., Díaz, J.A., Ríos-Mercado, R.Z.
An improved exact algorithm for a territory design problem with p-center-based dispersion minimization

(2020) *Expert Systems with Applications*, 146, art. no. 113150. Cited 9 times.
<https://www.journals.elsevier.com/expert-systems-with-applications>
doi: 10.1016/j.eswa.2019.113150

View at Publisher
-
- 35 Irawan, C.A., Imran, A., Luis, M.
Solving the bi-objective capacitated p-median problem with multilevel capacities using compromise programming and VNS

(2020) *International Transactions in Operational Research*, 27 (1), pp. 361-380. Cited 12 times.
[http://onlinelibrary.wiley.com/journal/10.1111/\(ISSN\)1475-3995](http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1475-3995)
doi: 10.1111/itor.12485

View at Publisher
-
- 36 Mokhtar, H., Krishnamoorthy, M., Ernst, A.T.
The 2-allocation p-hub median problem and a modified Benders decomposition method for solving hub location problems

(2019) *Computers and Operations Research*, 104, pp. 375-393. Cited 23 times.
www.elsevier.com/inca/publications/store/3/0/0/
doi: 10.1016/j.cor.2018.09.006

View at Publisher
-
- 37 Romero, M., Granillo, E., González, R.
A hybrid VNS / TABU search algorithm for solution the P-median problem
(2020) *Int. J. Comb. Optim. Probl. Informatics*, 11 (2), pp. 67-74. Cited 4 times.
[37]
-

- 38 Lai, X., Hao, J.-K., Glover, F.
A study of two evolutionary/tabu search approaches for the generalized max-mean dispersion problem ([Open Access](#))

(2020) *Expert Systems with Applications*, 139, art. no. 112856. Cited 10 times.
<https://www.journals.elsevier.com/expert-systems-with-applications>
doi: 10.1016/j.eswa.2019.112856

[View at Publisher](#)
-
- 39 Muliadi
Pemodelan algoritma genetika pada sistem penjadwalan perkuliahan prodi Ilmu Komputer Universitas Lambungmangkurat
(2014) *Kumpul. J. Ilmu Komput*, pp. 67-78. Cited 3 times.
[39] 01 01
-
- 40 Setiawati, L., Gaffar, A. F. O.
Penerapan algoritma genetika untuk pengenalan pola suara
(2017) *SNSebatik (Seminar Nasional Serba Informatika 20017)*, 1 (1), pp. 66-70. Cited 3 times.
[40] in
-
- 41 Xu, F., Li, J.
A hybrid encoded memetic algorithm for set covering problem ([Open Access](#))

(2018) *Proceedings - 2018 10th International Conference on Advanced Computational Intelligence, ICACI 2018*, pp. 552-557. Cited 3 times.
<http://ieeexplore.ieee.org/xpl/mostRecentIssue.jsp?punumber=8370614>
ISBN: 978-153864362-4
doi: 10.1109/ICACI.2018.8377519

[View at Publisher](#)
-
- 42 Tanujaya, W., Dewi, D. R. S., Endah, D.
Penerapan algoritma genetik untuk penyelesaian masalah vehicle routing di PT. MIF
(2011) *Jurnal*, 10 (1), pp. 92-102. Cited 3 times.
[42]
-
- 43 Sevkli, M., Guner, A.R.
A continuous particle swarm optimization algorithm for uncapacitated facility location problem

(2006) *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*, 4150 LNCS, pp. 316-323. Cited 54 times.
<https://www.springer.com/series/558>
ISBN: 3540384820; 978-354038482-3
doi: 10.1007/11839088_28

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