

BIBLIOGRAPHY

- Z. Al Chami, H. Manier, and M.-A. Manier. New model for a variant of pick up and delivery problem. In *2016 IEEE International Conference on Systems, Man, and Cybernetics (SMC)*, pages 001708–001713, 2016. doi: 10.1109/SMC.2016.7844483.
- E. Alaia, I. Harbaoui Dridi, H. Bouchriha, and P. Borne. Genetic algorithm for multi-criteria optimization of multi-depots pick-up and delivery problems with time windows and multi-vehicles. *Acta Polytechnica Hungarica*, 12:155–174, 01 2015. doi: 10.12700/APH.12.8.2015.8.9.
- E. Alaia, I. Harbaoui Dridi, P. Borne, and H. Bouchriha. A comparative study of the pso and ga for the m-mdpdptw. *International Journal of Computers Communications & Control*, 13:8, 02 2018. doi: 10.15837/ijccc.2018.1.2970.
- S. Allahyari, S. Yaghoubi, and T. Van Woensel. The secure time-dependent vehicle routing problem with uncertain demands. *Computers & Operations Research*, 131: 105253, 2021. doi: <https://doi.org/10.1016/j.cor.2021.105253>.
- M. Altinoz and O. T. Altinoz. Multiobjective problem modeling of the capacitated vehicle routing problem with urgency in a pandemic period. *Neural Computing and Applications*, 35(5):3865–3882, Feb 2023. doi: 10.1007/s00521-022-07921-y.
- M. Asghari and S. M. J. Mirzapour Al-e-hashem. A green delivery-pickup problem for home hemodialysis machines; sharing economy in distributing scarce resources. *Transportation Research Part E: Logistics and Transportation Review*, 134:101815, 2020. doi: <https://doi.org/10.1016/j.tre.2019.11.009>.
- C. Audet, J. Bigeon, D. Cartier, S. Le Digabel, and L. Salomon. Performance indicators in multiobjective optimization. *European Journal of Operational Research*, 292(2):397–422, 2021. doi: <https://doi.org/10.1016/j.ejor.2020.11.016>.
- M. Ayaz, A. Panwar, and M. Pant. A brief review on multi-objective differential evolution. In M. Pant, T. K. Sharma, O. P. Verma, R. Singla, and A. Sikander, editors, *Soft Computing: Theories and Applications*, pages 1027–1040, Singapore, 2020. Springer Singapore.

- I. Aziez, J.-F. Côté, and L. C. Coelho. Exact algorithms for the multi-pickup and delivery problem with time windows. *European Journal of Operational Research*, 284(3):906–919, 2020. doi: <https://doi.org/10.1016/j.ejor.2020.01.040>.
- R. Baltean-Lugojan, R. Misener, P. Bonami, and A. Tramontani. Strong sparse cut selection via trained neural nets for quadratic semidefinite outer-approximations. Technical report, Imperial College, London, 2018.
- I. Bello, H. Pham, Q. V. Le, M. Norouzi, and S. Bengio. Neural combinatorial optimization with reinforcement learning. In *International Conference on Learning Representations - Workshop Track*, 2017.
- A. Ben-Said, A. Moukrim, R. N. Guibadj, and J. Verny. Using decomposition-based multi-objective algorithm to solve selective pickup and delivery problems with time windows. *Computers & Operations Research*, 145:105867, 2022. doi: <https://doi.org/10.1016/j.cor.2022.105867>.
- Y. Bengio, A. Lodi, and A. Prouvost. Machine learning for combinatorial optimization: A methodological tour d’horizon. *European Journal of Operational Research*, 290(2):405–421, 2021. doi: <https://doi.org/10.1016/j.ejor.2020.07.063>.
- F. M. Bergmann, S. M. Wagner, and M. Winkenbach. Integrating first-mile pickup and last-mile delivery on shared vehicle routes for efficient urban e-commerce distribution. *Transportation Research Part B: Methodological*, 131:26–62, 2020. doi: <https://doi.org/10.1016/j.trb.2019.09.013>.
- J. Blank and K. Deb. Pymoo: Multi-objective optimization in python. *IEEE Access*, 8:89497–89509, 2020. doi: [10.1109/ACCESS.2020.2990567](https://doi.org/10.1109/ACCESS.2020.2990567).
- Z. A. Chami, H. Manier, M.-A. Manier, and C. Fitouri. A hybrid genetic algorithm to solve a multi-objective pickup and delivery problem. *IFAC-PapersOnLine*, 50(1): 14656–14661, 2017. doi: <https://doi.org/10.1016/j.ifacol.2017.08.1906>.
- D. Chen, Y. Wang, and W. Gao. Combining a gradient-based method and an evolution strategy for multi-objective reinforcement learning. *Applied Intelligence*, 50(10): 3301–3317, Oct 2020. doi: [10.1007/s10489-020-01702-7](https://doi.org/10.1007/s10489-020-01702-7).
- L.-W. Chen. A routing solution algorithm for shared autonomous vehicles with time-varying congestion. In *Proceedings of the Asia-Pacific Conference on Intelligent*

- Medical 2018 & International Conference on Transportation and Traffic Engineering 2018*, APCIM & ICTTE 2018, pages 264–267, New York, NY, USA, 2018. Association for Computing Machinery. doi: 10.1145/3321619.3321655.
- L.-W. Chen. Impact assessment of food delivery on urban traffic. In *2019 IEEE International Conference on Service Operations and Logistics, and Informatics (SOLI)*, pages 236–241, 2019. doi: 10.1109/SOLI48380.2019.8955108.
- X. Chen, A. Ghadirzadeh, M. Björkman, and P. Jensfelt. Meta-learning for multi-objective reinforcement learning. In *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*, pages 977–983, 2019. doi: 10.1109/IROS40897.2019.8968092.
- X. Chen and Y. Tian. Learning to perform local rewriting for combinatorial optimization. In H. M. Wallach, H. Larochelle, A. Beygelzimer, F. d’Alché-Buc, E. B. Fox, and R. Garnett, editors, *Advances in Neural Information Processing Systems 32: Annual Conference on Neural Information Processing Systems 2019, NeurIPS 2019, December 8-14, 2019, Vancouver, BC, Canada*, pages 6278–6289, 2019.
- J. R. Cheng and M. Gen. Accelerating genetic algorithms with gpu computing: A selective overview. *Computers & Industrial Engineering*, 128:514–525, 2019. doi: <https://doi.org/10.1016/j.cie.2018.12.067>.
- W.-L. Chiang, X. Liu, S. Si, Y. Li, S. Bengio, and C.-J. Hsieh. Cluster-gcn: An efficient algorithm for training deep and large graph convolutional networks. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery & Data Mining, KDD ’19*, page 257–266, New York, NY, USA, 2019. Association for Computing Machinery. doi: 10.1145/3292500.3330925.
- R. T. Clemen. *Making Hard Decisions*. Brooks/Cole, 2 edition, 1996.
- J. L. Cohon. Multicriteria programming: Brief review and application. *Design optimization*, pages 163–191, 1985.
- S. Dabia, S. Ropke, T. van Woensel, and T. D. Kok. Branch and price for the time-dependent vehicle routing problem with time windows. *Transportation Science*, 47(3):380–396, 2013.

- C. Dai, Y. Wang, and M. Ye. A new multi-objective particle swarm optimization algorithm based on decomposition. *Information Sciences*, 325:541–557, 2015. doi: <https://doi.org/10.1016/j.ins.2015.07.018>.
- H. Dai, B. Dai, and L. Song. Discriminative embeddings of latent variable models for structured data. In M. Balcan and K. Q. Weinberger, editors, *Proceedings of the 33rd International Conference on Machine Learning, ICML 2016, New York City, NY, USA, June 19-24, 2016*, volume 48 of *JMLR Workshop and Conference Proceedings*, pages 2702–2711. JMLR.org, 2016.
- H. Dai, E. B. Khalil, Y. Zhang, B. Dilkina, and L. Song. Learning combinatorial optimization algorithms over graphs. In *Proceedings of the 31st International Conference on Neural Information Processing Systems, NIPS’17*, page 6351–6361, Red Hook, NY, USA, 2017. Curran Associates Inc.
- G. B. Dantzig and J. H. Ramser. The truck dispatching problem. *Management Science*, 6(1):80–91, 1959. doi: 10.1287/mnsc.6.1.80.
- I. Das and J. E. Dennis. A closer look at drawbacks of minimizing weighted sums of objectives for pareto set generation in multicriteria optimization problems. *Structural optimization*, 14(1):63–69, Aug 1997. doi: 10.1007/BF01197559.
- K. Deb, A. Pratap, S. Agarwal, and T. Meyarivan. A fast and elitist multiobjective genetic algorithm: Nsga-ii. *IEEE Transactions on Evolutionary Computation*, 6(2):182–197, 2002a. doi: 10.1109/4235.996017.
- K. Deb, L. Thiele, M. Laumanns, and E. Zitzler. Scalable multi-objective optimization test problems. In *Proceedings of the 2002 Congress on Evolutionary Computation. CEC’02 (Cat. No.02TH8600)*, volume 1, pages 825–830 vol.1, 2002b. doi: 10.1109/CEC.2002.1007032.
- K. Deb and R. B. Agrawal. Simulated binary crossover for continuous search space. *Complex Systems*, 9, 1995.
- K. Deb and S. Agrawal. A niched-penalty approach for constraint handling in genetic algorithms. In *Artificial Neural Nets and Genetic Algorithms*, pages 235–243, Vienna, 1999. Springer Vienna.

- K. Deb and H. Jain. An evolutionary many-objective optimization algorithm using reference-point-based nondominated sorting approach, part i: Solving problems with box constraints. *IEEE Transactions on Evolutionary Computation*, 18(4): 577–601, 2014. doi: 10.1109/TEVC.2013.2281535.
- M. Dorigo, M. Birattari, and T. Stutzle. Ant colony optimization. *IEEE Computational Intelligence Magazine*, 1(4):28–39, 2006. doi: 10.1109/MCI.2006.329691.
- I. H. Dridi, R. Kammarti, M. Ksouri, and P. Borne. Genetic algorithm for multi-criteria optimization of a multi-pickup and delivery problem with time windows. *IFAC Proceedings Volumes*, 42(4):1538–1543, 2009. doi: <https://doi.org/10.3182/20090603-3-RU-2001.0070>.
- C. D’Souza, S. Omkar, and J. Senthilnath. Pickup and delivery problem using meta-heuristics techniques. *Expert Systems with Applications*, 39(1):328–334, 2012. doi: <https://doi.org/10.1016/j.eswa.2011.07.022>.
- P. Duboue. *The Art of Feature Engineering: Essentials for Machine Learning*. Cambridge University Press, 2020. doi: 10.1017/9781108671682.
- M. Ehrgott. *Multicriteria Optimization*. Springer-Verlag, 2005. doi: 10.1007/3-540-27659-9.
- B. Ekici, I. Chatzikonstantinou, S. Sariyildiz, M. F. Tasgetiren, and Q.-K. Pan. A multi-objective self-adaptive differential evolution algorithm for conceptual high-rise building design. In *2016 IEEE Congress on Evolutionary Computation (CEC)*, pages 2272–2279, 2016. doi: 10.1109/CEC.2016.7744069.
- R. Elshaer and H. Awad. A taxonomic review of metaheuristic algorithms for solving the vehicle routing problem and its variants. *Computers & Industrial Engineering*, 140:106242, 2020. doi: <https://doi.org/10.1016/j.cie.2019.106242>.
- M. Emmerich and A. Deutz. Time complexity and zeros of the hypervolume indicator gradient field. In O. Schuetze, C. A. Coello Coello, A.-A. Tantar, E. Tantar, P. Bouvry, P. D. Moral, and P. Legrand, editors, *EVOLVE - A Bridge between Probability, Set Oriented Numerics, and Evolutionary Computation III*, pages 169–193, Heidelberg, 2014. Springer International Publishing.

- R. M. Everson, J. E. Fieldsend, and S. Singh. Full elite sets for multi-objective optimisation. In I. C. Parmee, editor, *Adaptive Computing in Design and Manufacture V*, pages 343–354, London, 2002. Springer London.
- E. Feinberg. Constrained discounted markov decision processes and hamiltonian cycles. In *Proceedings of the 36th IEEE Conference on Decision and Control*, volume 3, pages 2821–2826 vol.3, 1997. doi: 10.1109/CDC.1997.657840.
- C. Finn, P. Abbeel, and S. Levine. Model-agnostic meta-learning for fast adaptation of deep networks. In *Proceedings of the 34th International Conference on Machine Learning - Volume 70*, ICML’17, page 1126–1135. JMLR.org, 2017.
- L. M. Gambardella, E. Taillard, and G. Agazzi. Macs-vrptw: A multiple ant colony system for vehicle routing problems with time windows. In *New Ideas in Optimization*, page 63–76. McGraw-Hill Ltd., UK, GBR, 1999.
- A. García-Nájera and A. López-Jaimes. An investigation into many-objective optimization on combinatorial problems: Analyzing the pickup and delivery problem. *Swarm and Evolutionary Computation*, 38:218–230, 2018. doi: <https://doi.org/10.1016/j.swevo.2017.08.001>.
- S. Gass and T. Saaty. The computational algorithm for the parametric objective function. *Naval Research Logistics Quarterly*, 2(1-2):39–45, 1955. doi: <https://doi.org/10.1002/nav.3800020106>.
- F. Glover. Tabu search—part i. *ORSA Journal on Computing*, 1(3):190–206, 1989. doi: 10.1287/ijoc.1.3.190.
- Google. <https://developers.google.com/optimization>, 2016.
- Google. <https://developers.google.com/>, 2020.
- J. Guo and C. Liu. Time-dependent vehicle routing of free pickup and delivery service in flight ticket sales companies based on carbon emissions. *Journal of Advanced Transportation*, 2017:1918903, Jan 2017. doi: 10.1155/2017/1918903.
- J. Guo, C. Liu, and J. Yan. Efficient feasibility testing and scheduling for dial-a-ride problem with time-dependent travel time. In *2016 Chinese Control and Decision Conference (CCDC)*, pages 4543–4546, 2016. doi: 10.1109/CCDC.2016.7531803.

- P. Hansen, N. Mladenović, J. Brimberg, and J. A. M. Pérez. Variable neighborhood search. In *Handbook of Metaheuristics*, pages 57–97. Springer International Publishing, Cham, 2019. doi: 10.1007/978-3-319-91086-4_3.
- R. Hartley. Finite discounted vector markov decision processes. Technical report, Department of Decision Theory, Manchester University, 1979.
- K. He, X. Zhang, S. Ren, and J. Sun. Deep residual learning for image recognition. In *2016 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 770–778, 2016. doi: 10.1109/CVPR.2016.90.
- A. Hemmati, L. M. Hvattum, K. Fagerholt, and I. Norstad. Benchmark suite for industrial and tramp ship routing and scheduling problems. *INFOR: Information Systems and Operational Research*, 52(1):28–38, 2014. doi: 10.3138/infor.52.1.28.
- J. M. Herrmann, A. Price, and T. Joyce. 3. ant colony optimization and reinforcement learning. In *Computational Intelligence: Theoretical Advances and Advanced Applications*, pages 45–62. De Gruyter, Berlin, Boston, 2020. doi: doi:10.1515/9783110671353-003.
- S. C. Ho, W. Szeto, Y.-H. Kuo, J. M. Leung, M. Petering, and T. W. Tou. A survey of dial-a-ride problems: Literature review and recent developments. *Transportation Research Part B: Methodological*, 111:395–421, 2018. doi: <https://doi.org/10.1016/j.trb.2018.02.001>.
- L. P. Hoang, D. D. Le, T. Anh Tuan, and T. Ngoc Thang. Improving pareto front learning via multi-sample hypernetworks. *Proceedings of the AAAI Conference on Artificial Intelligence*, 37(7):7875–7883, Jun. 2023. doi: 10.1609/aaai.v37i7.25953.
- M. Hosny. Comparing genetic algorithms and simulated annealing for solving the pickup and delivery problem with time windows. In *Proceedings of the 2011 International Conference on Artificial Intelligence, ICAI 2011*, volume 2, pages 513 – 519, 2011.
- T.-Y. Hu and C.-P. Chang. A revised branch-and-price algorithm for dial-a-ride problems with the consideration of time-dependent travel cost. *Journal of Advanced Transportation*, 49(6):700–723, 2015. doi: <https://doi.org/10.1002/atr.1296>.

- S. Huband, P. Hingston, L. Barone, and L. While. A review of multiobjective test problems and a scalable test problem toolkit. *IEEE Transactions on Evolutionary Computation*, 10(5):477–506, 2006. doi: 10.1109/TEVC.2005.861417.
- B. Hunsaker and M. Savelsbergh. Efficient feasibility testing for dial-a-ride problems. *Operations Research Letters*, 30(3):169–173, 2002. doi: [https://doi.org/10.1016/S0167-6377\(02\)00120-7](https://doi.org/10.1016/S0167-6377(02)00120-7).
- S. Ichoua, M. Gendreau, and J.-Y. Potvin. Vehicle dispatching with time-dependent travel times. *European Journal of Operational Research*, 144(2):379–396, 2003. doi: [https://doi.org/10.1016/S0377-2217\(02\)00147-9](https://doi.org/10.1016/S0377-2217(02)00147-9).
- C. Igel, N. Hansen, and S. Roth. Covariance matrix adaptation for multi-objective optimization. *Evolutionary Computation*, 15(1):1–28, 2007. doi: 10.1162/evco.2007.15.1.1.
- S. Ioffe and C. Szegedy. Batch normalization: Accelerating deep network training by reducing internal covariate shift. In *Proceedings of the 32nd International Conference on International Conference on Machine Learning – Volume 37, ICML’15*, pages 448–456. JMLR.org, 2015.
- H. Ishibuchi, R. Imada, Y. Setoguchi, and Y. Nojima. How to Specify a Reference Point in Hypervolume Calculation for Fair Performance Comparison. *Evolutionary Computation*, 26(3):411–440, 09 2018. doi: 10.1162/evco_a_00226.
- H. Ismail Fawaz, G. Forestier, J. Weber, L. Idoumghar, and P.-A. Muller. Deep learning for time series classification: a review. *Data Mining and Knowledge Discovery*, 33(4):917–963, Jul 2019. doi: 10.1007/s10618-019-00619-1.
- S. Jung and A. Haghani. Genetic algorithm for a pickup and delivery problem with time windows. *Transportation Research Record*, 1733(1):1–7, 2000. doi: 10.3141/1733-01.
- V. Kachitvichyanukul, P. Sombuntham, and S. Kunnapapdeelert. Two solution representations for solving multi-depot vehicle routing problem with multiple pickup and delivery requests via pso. *Computers & Industrial Engineering*, 89:125–136, 2015. doi: <https://doi.org/10.1016/j.cie.2015.04.011>.

- J. Kallestad, R. Hasibi, A. Hemmati, and K. Sörensen. A general deep reinforcement learning hyperheuristic framework for solving combinatorial optimization problems. *European Journal of Operational Research*, 309(1):446–468, 2023. doi: <https://doi.org/10.1016/j.ejor.2023.01.017>.
- A. Karak and K. Abdelghany. The hybrid vehicle-drone routing problem for pick-up and delivery services. *Transportation Research Part C: Emerging Technologies*, 102:427–449, 2019. doi: <https://doi.org/10.1016/j.trc.2019.03.021>.
- J. Kennedy and R. Eberhart. Particle swarm optimization. In *Proceedings of ICNN'95 - International Conference on Neural Networks*, volume 4, pages 1942–1948 vol.4, 1995. doi: 10.1109/ICNN.1995.488968.
- G. Kim, Y.-S. Ong, C. K. Heng, P. S. Tan, and N. A. Zhang. City vehicle routing problem (city vrp): A review. *IEEE Transactions on Intelligent Transportation Systems*, 16(4):1654–1666, 2015. doi: 10.1109/TITS.2015.2395536.
- D. P. Kingma and J. Ba. Adam: A method for stochastic optimization. In Y. Bengio and Y. LeCun, editors, *3rd International Conference on Learning Representations, ICLR 2015, San Diego, CA, USA, May 7-9, 2015, Conference Track Proceedings*, 2015.
- W. Kool, H. van Hoof, and M. Welling. Attention, learn to solve routing problems! In *International Conference on Learning Representations*, 2019.
- S. Kunnappadeelert and V. Kachitvichyanukul. New enhanced differential evolution algorithms for solving multi-depot vehicle routing problem with multiple pickup and delivery requests. *International Journal of Services and Operations Management*, 31(3):370, 2018. doi: 10.1504/ijssom.2018.095562.
- Y.-D. Kwon, J. Choo, B. Kim, I. Yoon, Y. Gwon, and S. Min. Pomo: Policy optimization with multiple optima for reinforcement learning. In H. Larochelle, M. Ranzato, R. Hadsell, M. Balcan, and H. Lin, editors, *Advances in Neural Information Processing Systems*, volume 33, pages 21188–21198. Curran Associates, Inc., 2020.
- S. Lalwani, S. Singhal, R. Kumar, and N. Gupta. A comprehensive survey: Applications of multi-objective particle swarm optimization (mopso) algorithm. *Transactions on Combinatorics*, 2(1):39–101, 2013. doi: 10.22108/toc.2013.2834.

- K. Lee and J. Chae. Estimation of travel cost between geographic coordinates using artificial neural network: Potential application in vehicle routing problems. *ISPRS International Journal of Geo-Information*, 12(2), 2023. doi: 10.3390/ijgi12020057.
- J. K. Lenstra and A. H. G. R. Kan. Complexity of vehicle routing and scheduling problems. *Networks*, 11(2):221–227, 1981. doi: <https://doi.org/10.1002/net.3230110211>.
- B. Li, G. Wu, Y. He, M. Fan, and W. Pedrycz. An overview and experimental study of learning-based optimization algorithms for the vehicle routing problem. *IEEE/CAA Journal of Automatica Sinica*, 9(7):1115–1138, 2022a. doi: 10.1109/JAS.2022.105677.
- H. Li and A. Lim. A metaheuristic for the pickup and delivery problem with time windows. In *Proceedings 13th IEEE International Conference on Tools with Artificial Intelligence. ICTAI 2001*, pages 160–167, 2001. doi: 10.1109/ICTAI.2001.974461.
- J. Li, L. Xin, Z. Cao, A. Lim, W. Song, and J. Zhang. Heterogeneous attentions for solving pickup and delivery problem via deep reinforcement learning. *IEEE Transactions on Intelligent Transportation Systems*, 23(3):2306–2315, 2022b. doi: 10.1109/TITS.2021.3056120.
- K. Li, T. Zhang, and R. Wang. Deep reinforcement learning for multiobjective optimization. *IEEE Transactions on Cybernetics*, 51(6):3103–3114, 2021a. doi: 10.1109/TCYB.2020.2977661.
- K. Li, R. Chen, G. Fu, and X. Yao. Two-archive evolutionary algorithm for constrained multiobjective optimization. *IEEE Transactions on Evolutionary Computation*, 23(2):303–315, 2019. doi: 10.1109/TEVC.2018.2855411.
- X. Li, W. Luo, M. Yuan, J. Wang, J. Lu, J. Wang, J. Lu, and J. Zeng. Learning to optimize industry-scale dynamic pickup and delivery problems. In *2021 IEEE 37th International Conference on Data Engineering (ICDE)*, pages 2511–2522, Los Alamitos, CA, USA, apr 2021b. IEEE Computer Society. doi: 10.1109/ICDE51399.2021.00283.
- D. Liang, Z.-H. Zhan, Y. Zhang, and J. Zhang. An efficient ant colony system approach for new energy vehicle dispatch problem. *IEEE Transactions on Intelli-*

- gent Transportation Systems*, 21(11):4784–4797, 2020. doi: 10.1109/TITS.2019.2946711.
- T. Liang, J. Glossner, L. Wang, S. Shi, and X. Zhang. Pruning and quantization for deep neural network acceleration: A survey. *Neurocomputing*, 461:370–403, 2021. doi: <https://doi.org/10.1016/j.neucom.2021.07.045>.
- X.-L. Liao and C.-K. Ting. Solving the biobjective selective pickup and delivery problem with memetic algorithm. In *2013 IEEE Symposium on Computational Intelligence in Production and Logistics Systems (CIPLS)*, pages 107–114, 2013. doi: 10.1109/CIPLS.2013.6595207.
- Q. Lin, J. Li, Z. Du, J. Chen, and Z. Ming. A novel multi-objective particle swarm optimization with multiple search strategies. *European Journal of Operational Research*, 247(3):732–744, 2015. doi: <https://doi.org/10.1016/j.ejor.2015.06.071>.
- X. Lin, Z. Yang, and Q. Zhang. Poster: Pareto set learning for neural multi-objective combinatorial optimization. In *International Conference on Learning Representations*, April 2022.
- B. Liu, F. V. Fernández, Q. Zhang, M. Pak, S. Sipahi, and G. Gielen. An enhanced moea/d-de and its application to multiobjective analog cell sizing. In *IEEE Congress on Evolutionary Computation*, pages 1–7, 2010. doi: 10.1109/CEC.2010.5585957.
- F. Liu, C. Lai, and L. Wang. Reinforcement learning for the pickup and delivery problem. In *Artificial Neural Networks and Machine Learning - ICANN 2022: 31st International Conference on Artificial Neural Networks, Bristol, UK, September 6-9, 2022, Proceedings, Part II*, pages 87–98, Berlin, Heidelberg, 2022. Springer-Verlag. doi: 10.1007/978-3-031-15931-2_8.
- F.-Y. Liu and C. Qian. Prediction guided meta-learning for multi-objective reinforcement learning. In *2021 IEEE Congress on Evolutionary Computation (CEC)*, pages 2171–2178, 2021. doi: 10.1109/CEC45853.2021.9504972.
- X. Liu, D. Wang, Y. Yin, and T. Cheng. Robust optimization for the electric vehicle pickup and delivery problem with time windows and uncertain demands. *Computers & Operations Research*, 151:106119, 2023. doi: <https://doi.org/10.1016/j.cor.2022.106119>.

- H. Lu, X. Zhang, and S. Yang. A learning-based iterative method for solving vehicle routing problems. In *ICLR 2020 : Eighth International Conference on Learning Representations*, 2020.
- Q. Ma, S. Ge, D. He, D. Thaker, and I. Drori. Combinatorial optimization by graph pointer networks and hierarchical reinforcement learning, 2019.
- Y. Ma, X. Hao, J. Hao, J. Lu, X. Liu, T. Xialiang, M. Yuan, Z. Li, J. Tang, and Z. Meng. A hierarchical reinforcement learning based optimization framework for large-scale dynamic pickup and delivery problems. In M. Ranzato, A. Beygelzimer, Y. Dauphin, P. Liang, and J. W. Vaughan, editors, *Advances in Neural Information Processing Systems*, volume 34, pages 23609–23620. Curran Associates, Inc., 2021a.
- Y. Ma, J. Li, Z. Cao, W. Song, L. Zhang, Z. Chen, and J. Tang. Learning to iteratively solve routing problems with dual-aspect collaborative transformer. In M. Ranzato, A. Beygelzimer, Y. Dauphin, P. Liang, and J. W. Vaughan, editors, *Advances in Neural Information Processing Systems*, volume 34, pages 11096–11107. Curran Associates, Inc., 2021b.
- Y. Ma, J. Li, Z. Cao, W. Song, H. Guo, Y. Gong, and Y. M. Chee. Efficient neural neighborhood search for pickup and delivery problems. In L. D. Raedt, editor, *Proceedings of the Thirty-First International Joint Conference on Artificial Intelligence, IJCAI-22*, pages 4776–4784. International Joint Conferences on Artificial Intelligence Organization, 7 2022. doi: 10.24963/ijcai.2022/662.
- S. Madankumar and C. Rajendran. Mathematical models for green vehicle routing problems with pickup and delivery: A case of semiconductor supply chain. *Computers & Operations Research*, 89:183–192, 2018. doi: <https://doi.org/10.1016/j.cor.2016.03.013>.
- N. Madavan. Multiobjective optimization using a pareto differential evolution approach. In *Proceedings of the 2002 Congress on Evolutionary Computation. CEC'02 (Cat. No.02TH8600)*, volume 2, pages 1145–1150 vol.2, 2002. doi: 10.1109/CEC.2002.1004404.
- D. Mahapatra and V. Rajan. Multi-task learning with user preferences: Gradient descent with controlled ascent in pareto optimization. In H. D. III and A. Singh, edi-

- tors, *Proceedings of the 37th International Conference on Machine Learning*, volume 119 of *Proceedings of Machine Learning Research*, pages 6597–6607. PMLR, 13–18 Jul 2020.
- M. Mahmoudi and X. Zhou. Finding optimal solutions for vehicle routing problem with pickup and delivery services with time windows: A dynamic programming approach based on state-space-time network representations. *Transportation Research Part B: Methodological*, 89:19–42, 2016. doi: <https://doi.org/10.1016/j.trb.2016.03.009>.
- C. Malandraki and M. S. Daskin. Time dependent vehicle routing problems: Formulations, properties and heuristic algorithms. *Transportation Science*, 26(3):185–200, 1992. doi: [10.1287/trsc.26.3.185](https://doi.org/10.1287/trsc.26.3.185).
- H. Mao, M. Schwarzkopf, S. B. Venkatakrishnan, Z. Meng, and M. Alizadeh. Learning scheduling algorithms for data processing clusters. In *Proceedings of the ACM Special Interest Group on Data Communication, SIGCOMM '19*, page 270–288, New York, NY, USA, 2019. Association for Computing Machinery. doi: [10.1145/3341302.3342080](https://doi.org/10.1145/3341302.3342080).
- N. Mazyavkina, S. Sviridov, S. Ivanov, and E. Burnaev. Reinforcement learning for combinatorial optimization: A survey. *Computers & Operations Research*, 134: 105400, 2021. doi: <https://doi.org/10.1016/j.cor.2021.105400>.
- K. Miettinen. A posteriori methods. In *Nonlinear Multiobjective Optimization*, pages 77–113. Springer US, Boston, MA, 1998a. doi: [10.1007/978-1-4615-5563-6_4](https://doi.org/10.1007/978-1-4615-5563-6_4).
- K. Miettinen. A priori methods. In *Nonlinear Multiobjective Optimization*, pages 114–129. Springer US, Boston, MA, 1998b. doi: [10.1007/978-1-4615-5563-6_5](https://doi.org/10.1007/978-1-4615-5563-6_5).
- K. Miettinen. Concepts. In *Nonlinear Multiobjective Optimization*, pages 5–36. Springer US, Boston, MA, 1998c. doi: [10.1007/978-1-4615-5563-6_1](https://doi.org/10.1007/978-1-4615-5563-6_1).
- S. Mirshekarian and D. Sormaz. Machine learning approaches to learning heuristics for combinatorial optimization problems. *Procedia Manufacturing*, 17:102–109, 2018. doi: <https://doi.org/10.1016/j.promfg.2018.10.019>.
- V. Mnih, K. Kavukcuoglu, D. Silver, A. A. Rusu, J. Veness, M. G. Bellemare, A. Graves, M. Riedmiller, A. K. Fidjeland, G. Ostrovski, S. Petersen, C. Beattie, A. Sadik, I. Antonoglou, H. King, D. Kumaran, D. Wierstra, S. Legg, and

- D. Hassabis. Human-level control through deep reinforcement learning. *Nature*, 518(7540):529–533, February 2015. doi: 10.1038/nature14236.
- V. Mokarram and M. R. Banan. A new pso-based algorithm for multi-objective optimization with continuous and discrete design variables. *Structural and Multidisciplinary Optimization*, 57(2):509–533, Feb 2018. doi: 10.1007/s00158-017-1764-7.
- C. G. N. Velasco, P. Dejax and C. Prins. A non-dominated sorting genetic algorithm for a bi-objective pick-up and delivery problem. *Engineering Optimization*, 44(3): 305–325, 2012. doi: 10.1080/0305215X.2011.639368.
- R. Namboothiri and A. Erera. A set partitioning heuristic for local drayage routing under time-dependent port delay. In *2004 IEEE International Conference on Systems, Man and Cybernetics*, volume 4, pages 3921–3926 vol.4, 2004. doi: 10.1109/ICSMC.2004.1400957.
- S. Natarajan and P. Tadepalli. Dynamic preferences in multi-criteria reinforcement learning. In *Proceedings of the 22nd International Conference on Machine Learning*, ICML '05, page 601–608, New York, NY, USA, 2005. Association for Computing Machinery. doi: 10.1145/1102351.1102427.
- A. Navon, A. Shamsian, E. Fetaya, and G. Chechik. Learning the pareto front with hypernetworks. In *International Conference on Learning Representations*, 2021.
- M. Nazari, A. Oroojlooy, L. Snyder, and M. Takac. Reinforcement learning for solving the vehicle routing problem. In S. Bengio, H. Wallach, H. Larochelle, K. Grauman, N. Cesa-Bianchi, and R. Garnett, editors, *Advances in Neural Information Processing Systems*, volume 31. Curran Associates, Inc., 2018.
- A. Panichella. An adaptive evolutionary algorithm based on non-euclidean geometry for many-objective optimization. In *Proceedings of the Genetic and Evolutionary Computation Conference*, GECCO '19, pages 595–603, New York, NY, USA, 2019. Association for Computing Machinery. doi: 10.1145/3321707.3321839.
- V. Pareto. *Manual of Political Economy (Manuale Di Economia Politica)*. Kelley, New York, 1906.

- S. Parisi, M. Pirotta, and J. Peters. Manifold-based multi-objective policy search with sample reuse. *Neurocomputing*, 263:3–14, 2017. doi: <https://doi.org/10.1016/j.neucom.2016.11.094>.
- J. Perera, S.-H. Liu, M. Mernik, M. Črepinšek, and M. Ravber. A graph pointer network-based multi-objective deep reinforcement learning algorithm for solving the traveling salesman problem. *Mathematics*, 11(2), 2023. doi: 10.3390/math11020437.
- J. Peters, K. Mülling, and Y. Altün. Relative entropy policy search. In *Proceedings of the Twenty-Fourth AAAI Conference on Artificial Intelligence*, AAAI’10, page 1607–1612. AAAI Press, 2010.
- D. H. Phan and J. Suzuki. Evolutionary multiobjective optimization for the pickup and delivery problem with time windows and demands. *Mobile Networks and Applications*, 21(1):175–190, Feb 2016. doi: 10.1007/s11036-016-0709-5.
- T. Pinto, C. Alves, and J. Valério de Carvalho. Variable neighborhood search algorithms for pickup and delivery problems with loading constraints. *Electronic Notes in Discrete Mathematics*, 58:111–118, 2017. doi: <https://doi.org/10.1016/j.endm.2017.03.015>.
- H. N. Psaraftis. An exact algorithm for the single vehicle many-to-many dial-a-ride problem with time windows. *Transportation Science*, 17(3):351–357, 1983. doi: 10.1287/trsc.17.3.351.
- V. Pureza and G. Laporte. Waiting and buffering strategies for the dynamic pickup and delivery problem with time windows. *INFOR: Information Systems and Operational Research*, 46(3):165–175, 2008. doi: 10.3138/infor.46.3.165.
- I. Radosavovic, T. Xiao, S. James, P. Abbeel, J. Malik, and T. Darrell. Real-world robot learning with masked visual pre-training. *CoRL*, 2022.
- T. Robič and B. Filipič. Demo: Differential evolution for multiobjective optimization. In C. A. Coello Coello, A. Hernández Aguirre, and E. Zitzler, editors, *Evolutionary Multi-Criterion Optimization*, pages 520–533, Berlin, Heidelberg, 2005. Springer Berlin Heidelberg.
- D. M. Roijers, P. Vamplew, S. Whiteson, and R. Dazeley. A survey of multi-objective sequential decision-making. *J. Artif. Int. Res.*, 48(1):67–113, oct 2013.

- M. Rolf. The need for more: Need systems as non-linear multi-objective reinforcement learning. In *2020 Joint IEEE 10th International Conference on Development and Learning and Epigenetic Robotics (ICDL-EpiRob)*, pages 1–8, 2020. doi: 10.1109/ICDL-EpiRob48136.2020.9278062.
- S. Ropke and J.-F. Cordeau. Branch and cut and price for the pickup and delivery problem with time windows. *Transportation Science*, 43(3):267–286, 2009.
- S. Ropke and D. Pisinger. An adaptive large neighborhood search heuristic for the pickup and delivery problem with time windows. *Transportation Science*, 40(4):455–472, 2006. doi: 10.1287/trsc.1050.0135.
- R. E. Rosenthal. Concepts, theory, and techniques principles of multiobjective optimization*. *Decision Sciences*, 16(2):133–152, 1985. doi: <https://doi.org/10.1111/j.1540-5915.1985.tb01479.x>.
- C. S. Sartori and L. S. Buriol. A matheuristic approach to the pickup and delivery problem with time windows. In R. Cerulli, A. Raiconi, and S. Voß, editors, *Computational Logistics*, pages 253–267, Cham, 2018. Springer International Publishing.
- C. S. Sartori and L. S. Buriol. A study on the pickup and delivery problem with time windows: Matheuristics and new instances. *Computers & Operations Research*, 124:105065, 2020. doi: <https://doi.org/10.1016/j.cor.2020.105065>.
- M. W. P. Savelsbergh and M. Sol. The general pickup and delivery problem. *Transportation Science*, 29(1):17–29, 1995.
- J. Schulman, F. Wolski, P. Dhariwal, A. Radford, and O. Klimov. Proximal policy optimization algorithms. *CoRR*, abs/1707.06347, 2017.
- H. Seada and K. Deb. A unified evolutionary optimization procedure for single, multiple, and many objectives. *IEEE Transactions on Evolutionary Computation*, 20(3):358–369, 2016. doi: 10.1109/TEVC.2015.2459718.
- M. Setak, V. Azizi, H. Karimi, and S. Jalili. Pickup and delivery supply chain network with semi soft time windows: metaheuristic approach. *International Journal of Management Science and Engineering Management*, 12(2):89–95, 2017. doi: 10.1080/17509653.2015.1136247.

- Y. Shi, Y. Lin, B. Li, and R. Yi Man Li. A bi-objective optimization model for the medical supplies' simultaneous pickup and delivery with drones. *Computers & Industrial Engineering*, 171:108389, 2022. doi: <https://doi.org/10.1016/j.cie.2022.108389>.
- N. Srinivas and K. Deb. Multiobjective optimization using nondominated sorting in genetic algorithms. *Evol. Comput.*, 2(3):221–248, 1994. doi: 10.1162/evco.1994.2.3.221.
- R. Storn and K. Price. Differential evolution – a simple and efficient heuristic for global optimization over continuous spaces. *Journal of Global Optimization*, 11(4):341–359, Dec 1997. doi: 10.1023/A:1008202821328.
- P. Sun, L. P. Veelenturf, S. Dabia, and T. Van Woensel. The time-dependent capacitated profitable tour problem with time windows and precedence constraints. *European Journal of Operational Research*, 264(3):1058–1073, 2018a. doi: <https://doi.org/10.1016/j.ejor.2017.07.004>.
- P. Sun, L. P. Veelenturf, M. Hewitt, and T. Van Woensel. The time-dependent pickup and delivery problem with time windows. *Transportation Research Part B: Methodological*, 116:1–24, 2018b. doi: <https://doi.org/10.1016/j.trb.2018.07.002>.
- P. Sun, L. P. Veelenturf, M. Hewitt, and T. Van Woensel. Adaptive large neighborhood search for the time-dependent profitable pickup and delivery problem with time windows. *Transportation Research Part E: Logistics and Transportation Review*, 138:101942, 2020. doi: <https://doi.org/10.1016/j.tre.2020.101942>.
- I. Sutskever, O. Vinyals, and Q. V. Le. Sequence to sequence learning with neural networks. In *Proceedings of the 27th International Conference on Neural Information Processing Systems – Volume 2*, NIPS'14, pages 3104–3112, Cambridge, MA, USA, 2014. MIT Press.
- R. S. Sutton and A. G. Barto. *Reinforcement Learning: An Introduction*. A Bradford Book, Cambridge, MA, USA, 2018.
- C. Suwansirikul, T. L. Friesz, and R. L. Tobin. Equilibrium decomposed optimization: A heuristic for the continuous equilibrium network design problem. *Transportation Science*, 21(4):254–263, 1987.

- Y. Tan, Y. Jiao, H. Li, and X. Wang. Moea/d + uniform design: A new version of moea/d for optimization problems with many objectives. *Computers & Operations Research*, 40(6):1648–1660, 2013. doi: 10.1016/j.cor.2012.01.001.
- J. Tang, Y. Kong, H. Lau, and A. W. Ip. A note on “efficient feasibility testing for dial-a-ride problems”. *Operations Research Letters*, 38(5):405–407, 2010. doi: <https://doi.org/10.1016/j.orl.2010.05.002>.
- The Jin Ai and V. Kachitvichyanukul. A particle swarm optimization for the vehicle routing problem with simultaneous pickup and delivery. *Computers & Operations Research*, 36(5):1693–1702, 2009. doi: <https://doi.org/10.1016/j.cor.2008.04.003>.
- Y. Tian, T. Zhang, J. Xiao, X. Zhang, and Y. Jin. A coevolutionary framework for constrained multiobjective optimization problems. *IEEE Transactions on Evolutionary Computation*, 25(1):102–116, 2021. doi: 10.1109/TEVC.2020.3004012.
- S. Ueno, T. Moriya, M. Mimura, S. Sakai, Y. Shinohara, Y. Yamaguchi, Y. Aono, and T. Kawahara. Encoder transfer for attention-based acoustic-to-word speech recognition. In *Proc. Interspeech 2018*, pages 2424–2428, 2018. doi: 10.21437/Interspeech.2018-1424.
- P. Vamplew, R. Dazeley, A. Berry, R. Issabekov, and E. Dekker. Empirical evaluation methods for multiobjective reinforcement learning algorithms. *Machine Learning*, 84(1):51–80, Jul 2011. doi: 10.1007/s10994-010-5232-5.
- A. Vaswani, N. Shazeer, N. Parmar, J. Uszkoreit, L. Jones, A. N. Gomez, L. Kaiser, and I. Polosukhin. Attention is all you need. In *Proceedings of the 31st International Conference on Neural Information Processing Systems, NIPS’17*, page 6000–6010, Red Hook, NY, USA, 2017. Curran Associates Inc.
- P. Veličković, G. Cucurull, A. Casanova, A. Romero, P. Liò, and Y. Bengio. Graph attention networks, 2018.
- P. Venkateshan and K. Mathur. An efficient column-generation-based algorithm for solving a pickup-and-delivery problem. *Computers & Operations Research*, 38(12):1647–1655, 2011. doi: <https://doi.org/10.1016/j.cor.2011.02.009>.
- T. Vidal, T. G. Crainic, M. Gendreau, and C. Prins. Timing problems and algorithms: Time decisions for sequences of activities. *Networks*, 65(2):102–128, 2015. doi: <https://doi.org/10.1002/net.21587>.

- O. Vinyals, M. Fortunato, and N. Jaitly. Pointer networks. In C. Cortes, N. Lawrence, D. Lee, M. Sugiyama, and R. Garnett, editors, *Advances in Neural Information Processing Systems*, volume 28. Curran Associates, Inc., 2015.
- Z. Wang, M. Dessouky, T. Van Woensel, and P. Ioannou. Pickup and delivery problem with hard time windows considering stochastic and time-dependent travel times. *EURO Journal on Transportation and Logistics*, 12:100099, 2023. doi: <https://doi.org/10.1016/j.ejtl.2022.100099>.
- D. Wierstra, T. Schaul, T. Glasmachers, Y. Sun, J. Peters, and J. Schmidhuber. Natural evolution strategies. *Journal of Machine Learning Research*, 15(27):949–980, 2014.
- R. J. Williams. Simple statistical gradient-following algorithms for connectionist reinforcement learning. *Machine Learning*, 8(3):229–256, May 1992. doi: 10.1007/BF00992696.
- D. Wolfinger. A large neighborhood search for the pickup and delivery problem with time windows, split loads and transshipments. *Computers & Operations Research*, 126:105110, 2021. doi: <https://doi.org/10.1016/j.cor.2020.105110>.
- H.-H. Wu, P. Seetharaman, K. Kumar, and J. P. Bello. Wav2clip: Learning robust audio representations from clip. In *ICASSP 2022 - 2022 IEEE International Conference on Acoustics, Speech and Signal Processing (ICASSP)*, pages 4563–4567, 2022. doi: 10.1109/ICASSP43922.2022.9747669.
- H. Wu, J. Wang, and Z. Zhang. Modrl/dam: Multiobjective deep reinforcement learning algorithm using decomposition and attention model for multiobjective optimization. In K. Li, W. Li, H. Wang, and Y. Liu, editors, *Artificial Intelligence Algorithms and Applications*, pages 575–589, Singapore, 2020. Springer Singapore.
- L. Xin, W. Song, Z. Cao, and J. Zhang. Multi-decoder attention model with embedding glimpse for solving vehicle routing problems. *Proceedings of the AAAI Conference on Artificial Intelligence*, 35(13):12042–12049, May 2021. doi: 10.1609/aaai.v35i13.17430.

- J. Xu, Y. Tian, P. Ma, D. Rus, S. Sueda, and W. Matusik. Prediction-guided multi-objective reinforcement learning for continuous robot control. In *Proceedings of the 37th International Conference on Machine Learning*, 2020.
- K. Xu, W. Hu, J. Leskovec, and S. Jegelka. How powerful are graph neural networks? In *International Conference on Learning Representations*, 2019.
- M. Xu, J. M. Perez Rua, X. Zhu, B. Ghanem, and B. Martinez. Lowfidelity video encoder optimization for temporal action localization. In M. Ranzato, A. Beygelzimer, Y. Dauphin, P. Liang, and J. W. Vaughan, editors, *Advances in Neural Information Processing Systems*, volume 34, pages 9923–9935. Curran Associates, Inc., 2021.
- J. Yan, S. Yang, and E. Hancock. Learning for graph matching and related combinatorial optimization problems. In C. Bessiere, editor, *Proceedings of the Twenty-Ninth International Joint Conference on Artificial Intelligence, IJCAI-20*, pages 4988–4996. International Joint Conferences on Artificial Intelligence Organization, 7 2020. doi: 10.24963/ijcai.2020/694.
- S. Yang, L. Ning, P. Shang, and L. (Carol) Tong. Augmented lagrangian relaxation approach for logistics vehicle routing problem with mixed backhauls and time windows. *Transportation Research Part E: Logistics and Transportation Review*, 135: 101891, 2020. doi: <https://doi.org/10.1016/j.tre.2020.101891>.
- S. Yang, L. Ning, L. C. Tong, and P. Shang. Optimizing electric vehicle routing problems with mixed backhauls and recharging strategies in multi-dimensional representation network. *Expert Systems with Applications*, 176:114804, 2021. doi: <https://doi.org/10.1016/j.eswa.2021.114804>.
- V. F. Yu and S.-Y. Lin. Solving the location-routing problem with simultaneous pickup and delivery by simulated annealing. *International Journal of Production Research*, 54(2):526–549, 2016. doi: 10.1080/00207543.2015.1085655.
- V. F. Yu, G. Aloina, P. Jodiawan, A. Gunawan, and T.-C. Huang. The vehicle routing problem with simultaneous pickup and delivery and occasional drivers. *Expert Systems with Applications*, 214:119118, 2023. doi: <https://doi.org/10.1016/j.eswa.2022.119118>.

- L. Zadeh. Optimality and non-scalar-valued performance criteria. *IEEE Transactions on Automatic Control*, 8(1):59–60, 1963. doi: 10.1109/TAC.1963.1105511.
- H. Zhang, H. Ge, J. Yang, and Y. Tong. Review of vehicle routing problems: Models, classification and solving algorithms. *Archives of Computational Methods in Engineering*, 29(1):195–221, Jan 2022a. doi: 10.1007/s11831-021-09574-x.
- K. Zhang, F. He, Z. Zhang, X. Lin, and M. Li. Multi-vehicle routing problems with soft time windows: A multi-agent reinforcement learning approach. *Transportation Research Part C: Emerging Technologies*, 121:102861, 2020. doi: <https://doi.org/10.1016/j.trc.2020.102861>.
- K. Zhang, X. Lin, and M. Li. Transformer-based reinforcement learning for pickup and delivery problems with late penalties. *IEEE Transactions on Intelligent Transportation Systems*, 23(12):24649–24661, 2022b. doi: 10.1109/TITS.2022.3193852.
- K. Zhang, M. Li, J. Wang, Y. Li, and X. Lin. A two-stage learning-based method for large-scale on-demand pickup and delivery services with soft time windows. *Transportation Research Part C: Emerging Technologies*, 151:104122, 2023a. doi: <https://doi.org/10.1016/j.trc.2023.104122>.
- K. Zhang, M. Li, J. Wang, Y. Li, and X. Lin. A two-stage learning-based method for large-scale on-demand pickup and delivery services with soft time windows. *Transportation Research Part C: Emerging Technologies*, 151:104122, 2023b. doi: <https://doi.org/10.1016/j.trc.2023.104122>.
- Q. Zhang and H. Li. Moea/d: A multiobjective evolutionary algorithm based on decomposition. *IEEE Transactions on Evolutionary Computation*, 11(6):712–731, 2007. doi: 10.1109/TEVC.2007.892759.
- Y. Zhang, J. Wang, Z. Zhang, and Y. Zhou. MODRL/DEL: multiobjective deep reinforcement learning with evolutionary learning for multiobjective optimization. In *International Joint Conference on Neural Networks, IJCNN 2021, Shenzhen, China, July 18-22, 2021*, pages 1–8. IEEE, 2021. doi: 10.1109/IJCNN52387.2021.9534083.
- Z. Zhang, Z. Wu, H. Zhang, and J. Wang. Meta-learning-based deep reinforcement learning for multiobjective optimization problems. *IEEE Transactions on Neural*

- Networks and Learning Systems*, pages 1–14, 2022c. doi: 10.1109/TNNLS.2022.3148435.
- F. Zhao, L. Huan, Y. Zhang, W. Ma, and C. Zhang. A novel multi-objective optimization algorithm based on differential evolution and nsga-ii. In *2018 IEEE 22nd International Conference on Computer Supported Cooperative Work in Design ((CSCWD))*, pages 570–575, 2018. doi: 10.1109/CSCWD.2018.8465326.
- X. Zhou, L. Tong, M. Mahmoudi, L. Zhuge, Y. Yao, Y. Zhang, P. Shang, J. Liu, and T. Shi. Open-source vrplite package for vehicle routing with pickup and delivery: A path finding engine for scheduled transportation systems. *Urban Rail Transit*, 4(2):68–85, Jun 2018. doi: 10.1007/s40864-018-0083-7.
- E. Zitzler and L. Thiele. Multiobjective evolutionary algorithms: a comparative case study and the strength pareto approach. *IEEE Transactions on Evolutionary Computation*, 3(4):257–271, 1999. doi: 10.1109/4235.797969.
- E. Zitzler, L. Thiele, M. Laumanns, C. Fonseca, and V. da Fonseca. Performance assessment of multiobjective optimizers: an analysis and review. *IEEE Transactions on Evolutionary Computation*, 7(2):117–132, 2003. doi: 10.1109/TEVC.2003.810758.
- E. Zitzler, K. Deb, and L. Thiele. Comparison of multiobjective evolutionary algorithms: Empirical results. *Evol. Comput.*, 8(2):173–195, jun 2000. doi: 10.1162/106365600568202.
- Z. Zong, M. Zheng, Y. Li, and D. Jin. Mapdp: Cooperative multi-agent reinforcement learning to solve pickup and delivery problems. *Proceedings of the AAAI Conference on Artificial Intelligence*, 36(9):9980–9988, Jun. 2022. doi: 10.1609/aaai.v36i9.21236.
- W.-Q. Zou, Q.-K. Pan, and L. Wang. An effective multi-objective evolutionary algorithm for solving the agv scheduling problem with pickup and delivery. *Knowledge-Based Systems*, 218:106881, 2021. doi: <https://doi.org/10.1016/j.knosys.2021.106881>.