The Application of Combined Multiple-Objective and Genetic Algorithm in FMS Scheduling

E-mail: 8603911@ mail.dyu.edu.tw

ABSTRACT

Flexible Manufacturing System   FMS
[1]

Genetic Algorithms   Mutiple-Objective
Membership Function)

Efficiency   Performance

FMS

Keywords : Flexible Manufacturing System ; Multiple Objective ; Genetic Algorithm ; Membership Function

Table of Contents

REFERENCES

1. (CIM)--CAD/CAM 2.

3. " FMS " pp138-145

4. " " 5. "

" 6. "

" 7. " " 8.

" " 9. " "

10. " " 84 pp370-377

11. " "

pp369-290 12. " " 13. "Fuzzy

: " 14. " "

15. Austin,S.," An Introduction to Genetic Algorithms", AI Expert, Mar.,pp49-53,1990. 16. Aanen,E.,Gaalman, G.J. and Nawijn, W.M, "A Scheduling Approach for A Flexible Manufacturing System", Inc.J.Prod.Res., Vol.31, No.10,pp2369-2385,1993. 17. Biegel,John E. and Davern, James J.,"Genetic Algorithms and Job Shop Scheduling", Computers ind.Eng.,Vol 19,Nos 1-4,pp81-91,1990.

18. Bramlette,M.F.,"Initialisation,Mutation and Selection and Selection Methods in Genetic Algorithm for Function Optimisation", Proceeding of the Forth International Conf. on Genetic Algorithms,pp100-107,1991. 19. Bit,A.K.,Biswal,M.P.and Alam S.S.,"Fuzzy Programming Approach to Multiple-criteria Decision Making Transportation Problem", Fuzzy Sets and systems, Vol.50, pp135-141,1992. 20. Chen, Chuen-Lung. Vempati, Venkateswara S. and Nasser, Aljaber,"An Application of Genetic Algorithms for Flow Shop Problems", European Journal of Operational Research,80,pp389-396,1995. 21. Chandra,J.and Talavage,J.,"Intelligent Dispatching for Flexible Manufacturing System", Int.J.Pro.Res.,Vol.29,No.11,pp2259-2278,1991. 22. Chen,Injazz J. and Chung. Chen-Hua,"Effects of Loading and Routing Decisions on Performance of Flexible Manufacturing Systems", Int.J.Prod.Res.,Vol 29, No.11,pp2209-2225,1991. 23. Dagli,Cihan and Sinchai,Sittisathanchai," Genetic Neuro-Scheduler for Job Shop Scheduling", Computers and Industrial Engineering,Vol.25,Nos 1-4,pp267-270,1993.

24. Davis,Lawrence,"Job Shop Scheduling with Genetic Algorithms",Proc. of 1st Int.Conf.on Genetic Algorithms and their Applications,pp 136-140,1987. 25. Falkenaurer,E. and Bouffouix, S., "A Genetic Algorithms for Job Shop Scheduling", Proceedings of the 1991 IEEE International Conference on Robtics and Automation Sacramento, April,pp824-829,1991. 26. Grefenstette, John J.,"Optimization of Control Parameters for Genetic Algorithms", IEEE Trans. on Sys. Man, and Cyber,Vol.Smc16,No 1, Jan/Feb,pp122-128,1986. 27. Gupta,Y.P.,Cupta,M.C.and Bector,C.R.,"A Review of Scheduling Rule in FMS", Int.J. Computer Integrated Manufacturing,Vol.2, No.6,pp356-377,1989.

28. Goldberg,D.E.,"Genetic Algorithms in Search,Optimization,and Machine Learning", Adision-Wesley Publishing Company,1989. 29. Holland,J.H.,"Adaptation in Nature and Artificial Systems",MIT Press,1975. 30. Hou,Edwin S.H., Nirwan, Ansari and Hong,Ren,"A Genetic Algorithms for Multiprocessor Scheduling",IEEE Transaction on Parallel and Distributed System,Vo 15, No 2, February,pp113-120,1994.

31. Hou,Edwin S.H. and Li,Hung-Yuan,"Task Scheduling for Flexible Manufacturing Systems Based on Genetic Algorithms", IEEE International Conference on System, Man and Cybernetics,pp397-402,1991. 32. Hutchison,J.,"Current and Future, Issues Concerning FMS Scheduling", OMEGA Int.J.of Mgmt Sci, Vol.19,No.6,pp529-537,1991. 33. Hutchison,Jim,Leong,Keong,Snyder,David and Ward,Peter,"Scheduling Approaches for Random Job Shop Flexible Manufacturing Systems",International Journal of Pro.Res.,Vol.29,No.5,pp1053-1067,1991.

34. Herrmann,Frank,Klaus,Muller and Sebastian,Engell,"FMS Scheduling Using Branch and Bound with Heuristics",Pro.of the 31st Conf. on Decision and Control,pp409-410,1992. 35. Hannan,E.L.,"Linear Programming with Multiple Goals", Fuzzy Sets and Systems,6,pp235-248,1981.

36. Hsu,G.J.Y. and Y.R. Tzeng,"A new Algorithm of Fuzzy Multiobjective Programming: The Compromise Factor Approach",Pro. The First International Symposium on Uncertainty Modeling and Analysis, Maryland University, Maryland,Dec.3-5,1990. 37. Iwata,K.Murotsu A. and Oba,F.,"Production Scheduling of Flexible Manufacturing Systems", Annals of CIRP, Vol.31,pp319-322,1982. 38. Jiang,J.and Hsiao,W.C.,"Mathematical Programming for the Scheduling Problem with Alternative Process Plans in FMS",Computers Ind. Eng., Vol.27,Nos1-4,pp15-18,1994. 39. Janikow,C.Z.and Michalewic, Z.,"An Experimental Comparison Binary and Floating Point Representations in Genetic Algorithms", Proceeding of the Forth International Conference on Genetic Algorithms,pp31-36,1991. 40. Kim,Yeo Keun, Kim,Young Ju and Kim,Yeongho,"Genetic Algorithms for Assembly Line Balancing with Various Objectives", Computers and Industrial Engineering, Vol.30,No 3,pp397-409,1996. 41. Lee,S.M. and Jung,H.J.,"A Multi-Objective Production Planning Model in a Flexible Manufacturing Environment", International Journal of Production Research,Vol.27,No.11,pp1981-1992,1989. 42. Lee,Doo Yong and DiCesare, Frank,"FMS Scheduling Using Petri Nets and Heuristic Search",Pro. of the 1992 IEEE Int.Conf.on Robotics and Automation,May,pp1057-1062,1992. 43. Liepins,G.E.and Hilliard,M.R.,"Genetic Algorithms:Foundations and Applications",Annals of Operations Research,21,pp31-58,1989. 44. Leibenstein,H.,"On Finding Compromise solutions in Multicriteria Problems Using The Fuzzy Min-Operator", Fuzzy Sets and Systems,6,pp105-118,1981.

45. Muller,H.,Samblanckx S.D. and Matthys,D.,"The Expert Scheduling Production Systems", International Journal of Production Research,Vol.25, No.11,pp1659-1670,1987. 46. Moser, Manfred and Engell, Sebastian,"A Survey of Priority Rules for FMS Scheduling and Their Performance for the Benchmark Problem", Proceedings of the 31st Conference on Decision and Control,December,pp392-397,1992.

47. Mukhopadhyay,S.K., Bibekananda, Mait and Sandip, Garg," Heuristic Solution to the Scheduling Problems in Flexible Manufacturing

System", Int. J.Pro.Res., Vol. 29, No. 10, pp2003-2024, 1991. 48.Murata,Tadahiko and Hisao, Ishibuchi,"Performance Evaluation of Genetic Algorithm for Flow shop Scheduling Problem", IEEE Trans. on Eng. Management, Vol. 22, Iss 2, pp812-817, 1994. 49.Oliver,I.M.,Smith,D.J.and Holland,J.R.C.,"A Study of Permutation Crossover Operators on the Traveling Salesman Problem",Pro. of the Second Int. Conf.on Genetic Algorithms and their Applications,pp224-230,1987. 50.Paulli,Jan,"A Hierarchical Approach for the FMS Scheduling Problem",European Journal of Operational Research, 86, pp32-42,1995. 51.Stecke,Kathryn E.and Narayan,Raman,"FMS Planning Decisions,Operating Flexibilities, and System Performance",IEEE Transaction on Engineering Management,Vol.42,No 1,February,pp82-89,1995. 52.Sauve,B.and Collinot,A.,"An Expert System for Scheduling in a Flexible Manufacturing System", International Journal of Production Research,Vol.3,No.2,pp229-233,1987. 53.Sridhar,Jagabandhu and Rajendran, Chandrasekharan," A Genetic Algorithms for Family and Job Scheduling in a Flowline-Based Manufacturing Cell", Computers and Industrial Engineering,Vol.27,Nos 1-4,pp469-472,1994. 54.Shaw,Michael J.,"Knowledge-based Scheduling in Flexible Manufacturing Systems: An Integration of Pattern-Directed Inference and Heuristic Search",Int.J.Prod.Res.,Vol.26,No 5,pp821-844,1988. 55.Shang,Y.and Li,G.J.,"New Crossover Operators in Genetic Algorithms", Proc.of The 1991 IEEE Int.Conf.On Tools For AI,pp150-153,1991. 56.Stoeva,Stefka,P.,"A Due Date-Based Dispatching Rule for Flexible Manufacturing Systems",Int.J.Prod.Res.,Vol.28,No.11,pp1991-1999,1990. 57.Sakawa,M.and T.Yumine,"Interactive Fuzzy Decision Making for Multiobjective Linear Functional Programming Problems",Large Scale Systems,Vol.5,No.2,pp105-113,1984. 58.Venugopal,V.and Narendran,T.T.,"A Genetic Algorithms Approach to The Machine-Component Grouping Problem with Multipe Obiectives", Computers and Industrial Engineering ,Vol 22,No.4,pp469-480,1992. 59.Wang,M.J.and Liang,M.,"Personal Selection Using Fuzzy MCDM Algorithms",European Journal of Operational Research,78,1994. 60.Zadeh,L.A.,"Optimality and Nonscalar-Valued Performance Criteria",IEEE Transactions on Automatic Control,Vol.AC-8, 1,1963,pp159-170. 61.Zimmermann,H.J.,"Fuzzy Programming and Linear Programming with Several Objective Functions",Fuzzy Sets and Systems,Vol.1, No.1,1978,pp45-56.