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[Journal of Theoretical and Applied Information Technology](#)
Volume 54, Issue 1, July 2013, Pages 48-58
[Open Access](#)

Genetic algorithm and programming based classification: A survey (Article)

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Abstract

Classification is the process of finding a model or a function that describes and distinguishes data classes and concepts, for the purpose of being able to use the model to predict the classes of objects whose class label is not known. The process of data analysis becomes time consuming and tedious as volume of data increases. So to make the process of data classification faster, soft computing techniques have been applied. Great deal of work has been done in the area of classification using evolutionary techniques. This survey gives an insight into the work done on classification using genetic algorithms and genetic programming and their applications in different problems and areas. © 2005-2013 JATIT & LLS. All rights reserved.

Author keywords

Classification; Fitness function; Genetic algorithm; Genetic programming

ISSN: 19928645 **Source Type:** Journal **Original language:** English
Document Type: Article
Publisher: Asian Research Publishing Network (ARPN)

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1

Gupta, G.K.
Introduction to Data Mining With Case Studies. [Cited 55 times.](#)
Prentice hall of India Pvt. Ltd., New Delhi

☐

2

Fayyad, Usama, Uthurusamy, Ramasamy
[Data mining and knowledge discovery in databases](#)
Communications of the ACM, 39 (11), p. 2. [Cited 171 times.](#)

☐

3

Han, J., Kamber, M.
Data Mining Concepts and Techniques. [Cited 11836 times.](#)
Morgan Kaufmann, San Francisco

☐

4

Witten, I.H., Frank, E., Hall, M.A.
Data Mining Practical Machine Learning Tools and Techniques. [Cited 13553 times.](#)
Morgan Kaufmann publisher, Burlington

☐

5

Tan, J.-S., He, W., Qing, Y.
[Application of genetic algorithm in data mining](#)
Proceedings of the 1st International Workshop on Education Technology and Computer Science, ETCS 2009, 2, art. no. 4959054, pp. 353-356. [Cited 3 times.](#)
ISBN: 978-076953557-9
doi: 10.1109/ETCS.2009.340
[View at Publisher](#)

☐

6

Shi, Z.Z.
Knowledge Discovery. [Cited 195 times.](#)
Tsinghua University Press, Beijing

☐

7

Mitra, S., Pal, S.K., Mitra, P.
[Data mining in soft computing framework: A survey](#)
IEEE Transactions on Neural Networks, 13 (1), pp. 3-14. [Cited 346 times.](#)
doi: 10.1109/72.977258
[View at Publisher](#)

Cited by 5 documents

[Performance study of an enhanced solar greenhouse combined with the phase change material using genetic algorithm optimization method](#)
Ziapour, B.M. , Hashtroudi, A.
(2017) *Applied Thermal Engineering*

[Data mining and medical world: Breast cancers' diagnosis, treatment, prognosis and challenges](#)
Oskoueï, R.J. , Kor, N.M. , Maleki, S.A.
(2017) *American Journal of Cancer Research*

[GACE: A meta-heuristic based in the hybridization of Genetic Algorithms and Cross Entropy methods for continuous optimization](#)
Lopez-Garcia, P. , Onieva, E. , Osaba, E.
(2016) *Expert Systems with Applications*

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(2006) *Proceedings of the IEEE International Conference on Industrial Technology*

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Robu, R. , Holban, S.
(2015) *International Journal of Artificial Intelligence*

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- ☐ Catlett, J.
8 *On Changing Continuous Attributes Into Ordered Discrete Attributes, Machine Learning-EWSL-91*
Springer Berlin Heidelberg
- ☐ Guyon, I., Matic, N., Vapnik, V.
9 Discovering informative patterns and data cleaning
Advances In Knowledge Discovery and Data Mining, p. 1996.
AAAI/MIT Press, California
- ☐ Pfahringer, B.
10 *Compression-based Discretization of Continuous Attributes*, pp. 456-463.
Proceeding of 12th International Conference on Machine Learning, San Francisco, July
- ☐ Pyle, D.
11 *Data Preparation For Data Mining, Morgan Kaufmann Publisher, San Francisco*. [Cited 648 times](#).
- ☐ Simoudis, E., Livezey, B., Kerber, R.
12 *Integrating Inductive and Deductive Reasoning For Data Mining*. [Cited 18 times](#).
Advances in knowledge discovery and data mining, AAAI/MIT Press, California
- ☐ Holland, J.H.
13 *Adaptation In Natural and Artificial Systems: An Introductory Analysis With Applications to Biology, Control, and Artificial Intelligence*. [Cited 27285 times](#).
MIT Press, Michigan
- ☐ Goldberg, D.E.
14 *Genetic Algorithms In Search, Optimization and Machine Learning*. [Cited 40740 times](#).
Addison-Wesley Longman publishing Co., Boston
- ☐ Alba, E., Carlos, C.
15 *The On-Line Tutorial On Evolutionary Computation*
Accessed 21 August 2011
<http://www.lcc.uma.es/~ccottap/semEC>
- ☐ Alba, E., Tomassini, M.
16 [Parallelism and evolutionary algorithms](#)
IEEE Transactions on Evolutionary Computation, 6 (5), pp. 443-462. [Cited 511 times](#).
doi: 10.1109/TEVC.2002.800880
[View at Publisher](#)
- ☐ Alba, E., Troya, J.M.
17 A survey of parallel distributed genetic algorithms
Complexity, VI, 4, pp. 31-52. [Cited 198 times](#).
- ☐ Baluja, S.
18 Structure and Performance of fine grain parallelism in genetic search
Proceedings of the 5th International Conference On Genetic Algorithms, San Francisco, Kaufmann Publishers Inc, pp. 155-162. [Cited 49 times](#).
- ☐ Belding, T.C.
19 The distributed genetic algorithm revisited
Proceedings of the 6th International Conference On Genetic Algorithms, San Francisco, Morgan Kaufmann Publishers Inc, pp. 114-121. [Cited 123 times](#).
- ☐ Cantu-Paz, E.
20 A survey of parallel genetic algorithms," *Calculeteurs, Paralleles, Reseaux et Systemes Repartis*, 10, pp. 141-171. [Cited 430 times](#).
- ☐ Tanese, R.
21 *Distributed Genetic Algorithms*. [Cited 435 times](#).
Morgan Kaufmann publishers Inc., San Francisco
- ☐ Koza, R.
22 *Genetic Programming: On the Programming of Computers By Means of Natural Selection*. [Cited 7416 times](#).
MA: MIT Press,Cambridge
- ☐ Blum, A.L., Langley, P.

- 23 [Selection of relevant features and examples in machine learning](#)
Artificial Intelligence, 97 (1-2), pp. 245-271. [Cited 1428 times](#).
[View at Publisher](#)
- ☐ Kohavi, R., John, G.H.
- 24 [Wrappers for feature subset selection](#)
Artificial Intelligence, 97 (1-2), pp. 273-324. [Cited 3919 times](#).
[View at Publisher](#)
- ☐ Tseng, Lin Yu, Yang, Shiueng Bien
- 25 [Genetic algorithms for clustering, feature selection and classification](#)
IEEE International Conference on Neural Networks - Conference Proceedings, 3, pp. 1612-1616. [Cited 18 times](#).
- ☐ Raymer, M.L., Punch, W.F., Goodman, E.D., Kuhn, L.A., Jain, A.K.
- 26 [Dimensionality reduction using genetic algorithms](#)
IEEE Transactions on Evolutionary Computation, 4 (2), pp. 164-171. [Cited 518 times](#).
doi: 10.1109/4235.850656
[View at Publisher](#)
- ☐ Quinlan, J.R.
- 27 *C4.5: Programs For Machine Learning, San Mateo, CA*. [Cited 14673 times](#).
Morgan Kaufmann, San Francisco
- ☐ Cohen, W.W.
- 28 Fast Effective Rule Induction
Machine Learning-International Workshop then Conference, p. 1995. [Cited 4 times](#).
Morgan Kaufmann Publishers, Inc
- ☐ Freitas, A.A.
- 29 A survey of evolutionary algorithms for data mining and knowledge discovery
Advances In Evolutionary Computation, p. 2002.
Springer-Verlag, New York
- ☐ Smith, S.
- 30 *A Learning System Based On Genetic Algorithms*. [Cited 359 times](#).
Dissertation, University of Pittsburgh
- ☐ Dejong, K., Spears, W.M., Gordon, D.F.
- 31 *Using Genetic Algorithms For Concept Learning*
Springer US
- ☐ Noda, E., Freitas, A.A., Lopes, H.S.
- 32 [Discovering interesting prediction rules with a genetic algorithm](#)
Proceedings of the 1999 Congress on Evolutionary Computation, CEC 1999, 2, art. no. 782601, pp. 1322-1329. [Cited 64 times](#).
doi: 10.1109/CEC.1999.782601
[View at Publisher](#)
- ☐ Muntean, M., Valean, H.
- 33 *Learning Classification Rules With Genetic Algorithm*, pp. 213-216.
Communications (COMM), 2010 8th International Conference on, Bucharest, Romania
- ☐ Shi, X., Lei, H.
- 34 *A Genetic Algorithm-based Approach For Classification Rule Discovery*, pp. 175-178.
Proceedings of International conference on information management, innovation management and industrial engineering (IEEE), Taipei
- ☐ Yang, L., Widyantoro, D.H., Ioerger, T., Yen, J.
- 35 [An entropy-based adaptive genetic algorithm for learning classification rules](#)
Proceedings of the IEEE Conference on Evolutionary Computation, ICEC, 2, pp. 790-796. [Cited 22 times](#).
- ☐ Zhongyang, X., Lei, Z., Yufang, Z.
- 36 *A Classification Rule Mining Method Using Hybrid Genetic Algorithms*
IEEE TENCON, Thailand
- ☐ Zhang, Y.D., Wu, L.N.
- 37 [A genetic ant colony classifier](#)
2009 WRI World Congress on Computer Science and Information Engineering, CSIE 2009, 5, art. no. 5170632, pp. 744-748. [Cited 7 times](#).

ISBN: 978-076953507-4
doi: 10.1109/CSIE.2009.748

[View at Publisher](#)

- ☐ Fidelis, M.V., Lopes, H.S., Freitas, A.A.
38 *Discovering Comprehensible Classification Rules With a Genetic Algorithm*, pp. 805-810.
in Proceedings of congress on evolutionary computation, La Jolla, July
- ☐ Bojarczuk, C.C., Lopes, H.S., Freitas, A.A.
39 *Discovering comprehensible classification rules using Genetic Programming: A case study in a medical domain*
Proceedings of Genetic and Evolutionary Computation Conference (GECCO- 99), pp. 953-958. [Cited 30 times.](#)
- ☐ Tan, K.C., Tay, A., Lee, T.H., Heng, C.M.
40 *Mining Multiple Comprehensible Classification Rules Using Genetic Programming*, pp. 1302-1307.
in Proceedings of the 2002 congress on evolutionary computation, Honolulu, May
- ☐ Wong, M.L., Leung, K.S.
41 *Data Mining Using Grammar Based Genetic Programming and Applications*. [Cited 121 times.](#)
Kluwer Academic Publishers, London
- ☐ Robu, R., Holban, S.
42 [A genetic algorithm for classification](#)
Recent Researches in Computers and Computing - International Conference on Computers and Computing, ICCC'11, pp. 52-56.
ISBN: 978-161804000-8
- ☐ http://dms.irb.hr/tutorial/tut_dtrees.php
43
- ☐ Papagelis, A., Kalles, D.
44 [GA Tree: Genetically evolved decision trees](#)
Proceedings - International Conference on Tools with Artificial Intelligence, ICTAI, 2000-January, art. no. 889871, pp. 203-206. [Cited 25 times.](#)
ISBN: 0769509096
doi: 10.1109/TAI.2000.889871
[View at Publisher](#)
- ☐ Fu, Z.
45 [A computational study of using genetic algorithms to develop intelligent decision trees](#)
Proceedings of the IEEE Conference on Evolutionary Computation, ICEC, 2, pp. 1382-1387. [Cited 8 times.](#)
- ☐ Bala, J., Huang, J., Vafaie, H., Dejong, K., Wechsler, H.
46 Hybrid learning using genetic algorithms and decision trees for pattern classification
International Joint Conference On Artificial Intelligence, pp. 719-724. [Cited 49 times.](#)
- ☐ Burbidge, R., Buxton, B.F.
47 An introduction to support vector machines for data mining
University of Nottingham, Operational Research Society, pp. 3-15. [Cited 6 times.](#)
in: Sheppee, M., (ed) Keynote Papers, Young OR12
- ☐ Wang, X., Hua, Z., Bai, R.
48 [A hybrid text classification model based on rough sets and genetic algorithms](#)
Proc. 9th ACIS Int. Conf. Software Engineering, Artificial Intelligence, Networking and Parallel/Distributed Computing, SNPD 2008 and 2nd Int. Workshop on Advanced Internet Technology and Applications, art. no. 4617495, pp. 971-977. [Cited 3 times.](#)
ISBN: 978-076953263-9
doi: 10.1109/SNPD.2008.142
[View at Publisher](#)
- ☐ Tahayna, B., Belkhatir, M., Alhashmi, S.M., O'Daniel, T.
49 [Optimizing support vector machine based classification and retrieval of semantic video events with genetic algorithms](#)
Proceedings - International Conference on Image Processing, ICIP, art. no. 5653724, pp. 1485-1488.
ISBN: 978-142447994-8
doi: 10.1109/ICIP.2010.5653724
[View at Publisher](#)
- ☐ Frohlich, H., Chapelle, O.
50 *Feature Selection For Support Vector Machines By Means of Genetic Algorithms*, pp. 142-148. [Cited 10 times.](#)
in Proceedings of 15th IEEE international conference on tools with artificial intelligence, November
- ☐ Eshelman, L.J.
The CHC Adaptive Search Algorithm: How to Have Safe Search When Engaging In Nontraditional Genetic

- 51 *Recombination*, pp. 265-283. [Cited 597 times.](#)
in Proceedings of foundations of genetic algorithms (FOGA)
- ☐ Cunningham, P., Delany, S.J.
52 *K-Nearest Neighbour Classifiers*. [Cited 63 times.](#)
Technical Report UCD-CSI-2007
- ☐ Kelly, J.D., Davis, L.
53 *A Hybrid Genetic Algorithm For Classification*, pp. 645-650. [Cited 82 times.](#)
in Proceedings of 12th international joint conference on artificial intelligence, Sydney, Morgan Kaufmann
- ☐ Peterson, M.R., Doom, T.E., Raymer, M.L.
54 **GA-facilitated KNN classifier optimization with varying similarity measures**
2005 IEEE Congress on Evolutionary Computation, IEEE CEC 2005. Proceedings, 3, pp. 2514-2521. [Cited 18 times.](#)
ISBN: 0780393635; 978-078039363-9
- ☐ Pudil, P., Novovičová, J., Kittler, J.
55 **Floating search methods in feature selection**
Pattern Recognition Letters, 15 (11), pp. 1119-1125. [Cited 1608 times.](#)
doi: 10.1016/0167-8655(94)90127-9
[View at Publisher](#)
- ☐ Singh, Y., Chauhan, A.S.
56 Neural Networks in Data Mining
J. Inform. Tech. Theor. Appl, pp. 37-42. [Cited 42 times.](#)
- ☐ Foster, D., McCullagh, J., Whitfort, T.
57 *Evolution Versus Training: An Investigation Into Combining Genetic Algorithms and Neural Networks*, pp. 848-854.
in Proceedings of international conference on neural information processing and intelligent information systems (ICONIP), Perth
- ☐ Chen, M., Yao, Z.
58 **Classification techniques of neural networks using improved genetic algorithms**
Proceedings - 2nd International Conference on Genetic and Evolutionary Computing, WGEC 2008, art. no. 4637407, pp. 115-119. [Cited 21 times.](#)
ISBN: 978-076953334-6
doi: 10.1109/WGEC.2008.23
[View at Publisher](#)
- ☐ Kruse, R., Gebhardt, J., Klawonn, F.
59 *Foundations of Fuzzy Systems*. [Cited 355 times.](#)
J. Wiley and Sons, Chichester, United Kingdom
- ☐ Ishibuchi, H., Nozalu, K., Yamamoto, N., Tanaka, H.
60 *Acquisition of Fuzzy Classification Knowledge Using Genetic Algorithms*, pp. 1963-1968.
Proceedings of 3rd IEEE conference on fuzzy systems, Florida, June
- ☐ Zong-yi, X., Yuan-long, H., Zhong-zhi, T., Li-min, J.
61 **Construction of fuzzy classification system based on multi-objective genetic algorithm**
Proceedings - ISDA 2006: Sixth International Conference on Intelligent Systems Design and Applications, 2, art. no. 4021805, pp. 1029-1034. [Cited 3 times.](#)
ISBN: 0769525288; 978-076952528-0
doi: 10.1109/ISDA.2006.253753
[View at Publisher](#)
- ☐ Zhongyang, X., Zhang, Y., Zhang, L., Niu, S.
62 *A Parallel Classification Algorithm Based On Hybrid Genetic Algorithm*, pp. 3237-3240.
in Proceedings of the 6th world congress on intelligent control and automation, Dalian, China
- ☐ Rodríguez, M., Escalante, D.M., Peregrín, A.
63 **Efficient Distributed Genetic Algorithm for Rule extraction**
Applied Soft Computing Journal, 11 (1), pp. 733-743. [Cited 26 times.](#)
doi: 10.1016/j.asoc.2009.12.035
[View at Publisher](#)
- ☐ de Araujo, Dieferson Luis Alves, Lopes, Heitor S., Freitas, Alex A.
64 **Parallel genetic algorithm for rule discovery in large databases**
Proceedings of the IEEE International Conference on Systems, Man and Cybernetics, 3, pp. III-940 - III-945. [Cited 33 times.](#)

☐

Guan, S.-U., Zhu, F.

65

[An incremental approach to genetic-algorithms-based classification](#)

IEEE Transactions on Systems, Man, and Cybernetics, Part B: Cybernetics, 35 (2), pp. 227-239. [Cited 65 times.](#)
doi: 10.1109/TSMCB.2004.842247
[View at Publisher](#)

☐

Li, I.H., Liao, I.E., Pang, W.Z.

66

Mining classification rules in the presence of concept drift with an incremental genetic algorithm

J. Theor. Appl. Info. Tech, 4, pp. 608-623. [Cited 4 times.](#)

☐

Omar, A.J., Lakishmi, R., Rao, C.R.

67

Improved selection operator for GA

J Theor. Appl. Inform. Technol, 4, pp. 269-277. [Cited 34 times.](#)

☐

Vivekanandan, P., Nedunchezian, R.

68

[A new incremental genetic algorithm based classification model to mine data with concept drift](#)

Journal of Theoretical and Applied Information Technology, 21 (1), pp. 36-42. [Cited 4 times.](#)
<http://www.jatit.org/volumes/research-papers/Vol21No1/6Vol21No1.pdf>

☐

Vivekanandan, P., Nedunchezian, R.

69

A fast genetic algorithm for mining classification rules in large datasets

Int. J. Soft Computing, 1, pp. 10-20. [Cited 4 times.](#)

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