

# An Indexed Bibliography of Genetic Algorithms in Computer Science

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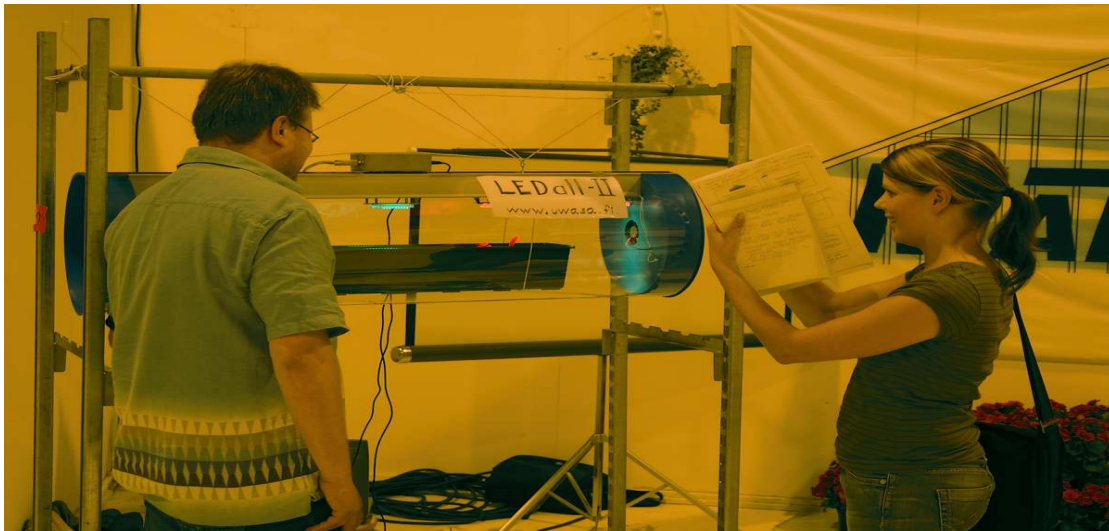
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*Dedicated to Prof. Timo Mantere*



Report Series No. 94-1-CS (Updated 2015/03/28 17:21 )

Available at <http://www.uva.fi/~TAU/reports/report94-1/gaCSbib.pdf>

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Timo Mantere at Närpiö (Finland) agricultural fair presenting his minigreenhouse lighted by cyan and red LEDs.

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## **Warning**

While this bibliography has been compiled with the utmost care, the editor takes no responsibility for any errors, missing information, the contents or quality of the references, nor for the usefulness and/or the consequences of their application. The fact that a reference is included in this publication does not imply a recommendation. The use of any of the methods in the references is entirely at the user's own responsibility. Especially the above warning applies to those references that are marked by trailing '†' (or '\*'), which are the ones that the editor has unfortunately not had the opportunity to read. An abstract was available of the references marked with '\*'.

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# Chapter 1

## Preface

“Living organisms are consummate problem solvers. They exhibit a versatility that puts the best computer programs to shame.”

*John H. Holland, [1]*

The material of this bibliography has been extracted from the genetic algorithm bibliography [2], which when this report was compiled (March 28, 2015) contained 23682 items and which has been collected from several sources of genetic algorithm literature including Usenet newsgroup `comp.ai.genetic` and the bibliographies [3, 4, 5, 6]. The following index periodicals and databases have been used systematically

- A: *International Aerospace Abstracts*: Jan. 1995 – Sep. 1998
- ACM: *ACM Guide to Computing Literature*: 1979 – 1993/4
- BA: *Biological Abstracts*: July 1996 - Aug. 1998
- CA: *Computer Abstracts*: Jan. 1993 – Feb. 1995
- CCA: *Computer & Control Abstracts*: Jan. 1992 – Dec. 1999 (except May -95)
- ChA: *Chemical Abstracts*: Jan. 1997 - Dec. 2000
- CTI: *Current Technology Index* Jan./Feb. 1993 – Jan./Feb. 1994
- DAI: *Dissertation Abstracts International*: Vol. 53 No. 1 – Vol. 56 No. 10 (Apr. 1996)
- EEA: *Electrical & Electronics Abstracts*: Jan. 1991 – Apr. 1998
- EI A: *The Engineering Index Annual*: 1987 – 1992
- EI M: *The Engineering Index Monthly*: Jan. 1993 – Apr. 1998 (except May 1997)
- Esp@cenet *patents* – Apr. 2002
- IEEE: *IEEE and IEE Journals* – Fall 2002
- N: *Scientific and Technical Aerospace Reports*: Jan. 1993 - Dec. 1995 (except Oct. 1995)
- NASA *NASA ADS www bibliography database*: – Dec. 2002
- P: *Index to Scientific & Technical Proceedings*: Jan. 1986 – Dec 1999 (except Nov. 1994)
- PA: *Physics Abstracts*: Jan. 1997 – June 1999
- PubMed: *National Library of Medicine* Jan. 2000 – Oct. 2000, 2011-2013
- SPIE Web *The International Society for Optical Engineering* – June 2002

## 1.1 Your contributions erroneous or missing?

The bibliography database is updated on a regular basis and certainly contains many errors and inconsistencies. The editor would be glad to hear from any reader who notices any errors, missing information, articles etc. In the future a more complete version of this bibliography will be prepared for the genetic algorithms in computer science research community and others who are interested in this rapidly growing area of genetic algorithms.

When submitting updates to the database, paper copies of already published contributions are preferred. Paper copies (or `ftp` ones) are needed mainly for indexing. We are also doing reviews of different aspects and applications of GAs where we need as complete as possible collection of GA papers. Please, do not forget to include complete bibliographical information: copy also proceedings volume title pages, journal table of contents pages, etc. Observe that there exists several versions of each subbibliography, therefore **the reference numbers are not unique and should not be used alone in communication**, use the **key** appearing as the last item of the reference entry instead.

Complete bibliographical information is really helpful for those who want to find your contribution in their libraries. If your paper was worth writing and publishing it is certainly worth to be referenced right in a bibliographical database read daily by GA researchers, both newcomers and established ones.

### 1.1.1 How to cite this report?

You can use the BiBTeX file `GASUB.bib`, which is available in our site `lipas.uwasa.fi` in directory `reports/report94-1` and contains records for GA subbibliographies for citing with L<sup>A</sup>T<sub>E</sub>X/BibT<sub>E</sub>X.

## 1.2 How to get this report via Internet?

Versions of this bibliography are available via `www` from the following site:

<i>media</i>	<i>country</i>	<i>site</i>	<i>directory</i>	<i>file</i>
<b>web</b>	Finland	<code>lipas.uwasa.fi</code>	<code>~TAU/reports/report94-1</code>	<code>gaCSbib.pdf</code>

The directory also contains some other indexed GA bibliographies shown in table A.1. In case you do not find a proper one please let us know: it may be easy to tailor a new one.

## 1.3 Acknowledgement

The editor wants to acknowledge all who have kindly supplied references, papers and other information on genetic algorithms in computer science literature. At least the following GA researchers have already kindly supplied their complete autobibliographies and/or proofread references to their papers: Dan Adler, Patrick Argos, Jarmo T. Alander, James E. Baker, Wolfgang Banzhaf, Helio J. C. Barbosa, Hans-Georg Beyer, Christian Bierwirth, Peter Bober Joachim Born, Ralf Bruns, I. L. Bukatova, Thomas Bäck, Chhandra Chakraborti, Nirupam Chakraborti, David E. Clark, Carlos A. Coello Coello, Yuval Davidor, Dipankar Dasgupta, Marco Dorigo, J. Wayland Eheart, Bogdan Filipić, Terence C. Fogarty, David B. Fogel, Toshio Fukuda, Hugo de Garis, Robert C. Glen, David E. Goldberg, Martina Gorges-Schleuter, Hitoshi Hemmi, Vasant Honavar, Jeffrey Horn, Aristides T. Hatjimihail, Heikki Hyötyniemi Mark J. Jakiela, Richard S. Judson, Bryant A. Julstrom, Charles L. Karr, Akihiko Konagaya, Aaron Konstam, John R. Koza, Kristinn Kristinsson, Malay K. Kundu, D. P. Kwok, Jouni Lampinen, Jorma Laurikkala, Gregory Levitin, Carlos B. Lucasius, Timo Mantere, Michael de la Maza, John R. McDonnell, J. J. Merelo, Laurence D. Merkle, Zbigniew Michalewicz, Melanie Mitchell, David J. Nettleton, Volker Nissen, Ari Nissinen, Tatsuya Niwa, Tomasz Ostrowski, Kihong Park, Jakub Podgórski, Timo Poranen, Nicholas J. Radcliffe, Colin R. Reeves, Gordon Roberts, David Rogers, David Romero, Sam Sandqvist, Ivan Santibáñez-Koref, Marc Schoenauer, Markus Schwehm, Hans-Paul Schwefel, Michael T. Semertzidis, Davil L. Shealy, Moshe Sipper, William M. Spears, Donald S. Szarkowicz, El-Ghazali Talbi, Masahiro Tanaka, Leigh Tesfatsion, Peter M. Todd, Marco Tomassini, Andrew L. Tuson, Kanji Ueda, Jari Vaario,

Gilles Venturini, Hans-Michael Voigt, Roger L. Wainwright, D. Eric Walters, James F. Whidborne, Stefan Wiegand, Steward W. Wilson, Xin Yao, Xiaodong Yin, and Ljudmila A. Zinchenko.

The editor also wants to acknowledge Elizabeth Heap-Talvela for her kind proofreading of the manuscript of this bibliography and Tea Ollanketo and Sakari Kauvosaari for updating the database. Prof. Timo Salmi and the Computer Centre of University of Vaasa is acknowledged for providing and managing the online web site `lipas.uwasa.fi`, where these indexed bibliographies are located since Summer 2012.

# Chapter 2

## Introduction

“Many scientist, possibly most scientist, just do science without thinking too much about it. They run experiments, make observations, show how certain data conflict with more general views, set out theories, and so on. Periodically, however, some of us—scientists included—step back and look at what is going on in science.”

David L., Hull, [7]

The table 2.1 gives the queries that have been used to extract this bibliography. The query system as well as the indexing tools used to compile this report from the BiBTeX-database [8] have been implemented by the author mainly as sets of simple `awk` and `gawk` programs [9, 10].

<i>string</i>	<i>field</i>	<i>class</i>
automaton	ANNOTE	Automata
automata	ANNOTE	Automata
computer science	ANNOTE	Computer science
database	ANNOTE	Databases
data structures	ANNOTE	Data structures
document retrieval	ANNOTE	Documents
formal language	ANNOTE	Formal languages
,graph	ANNOTE	Graphs
genetic programming	ANNOTE	Genetic programming
operating system	ANNOTE	Operating systems
query	ANNOTE	Databases
software testing	ANNOTE	Software testing
software /testing	ANNOTE	Software testing
software	ANNOTE	Software
sorting	ANNOTE	Sorting
scheduling /processor	ANNOTE	Multiprocessor scheduling

Table 2.1: Queries used to extract this subbibliography from the source database.

### Hint



# Chapter 3

## Statistical summaries

This chapter gives some general statistical summaries of genetic algorithms in computer science literature. More detailed indexes can be found in the next chapter.

References to each class (c.f table 2.1) are listed below:

- **Automata** 136 references ([11]-[146])
- **Computer science** 31 references ([147]-[177])
- **Data structures** 5 references ([178]-[182])
- **Databases** 103 references ([183]-[285])
- **Documents** 6 references ([286]-[291])
- **Formal languages** 8 references ([292]-[299])
- **Genetic programming** 920 references ([300]-[1219])
- **Graphs** 148 references ([1220]-[1367])
- **Multiprocessor scheduling** 2 references ([1368]-[1369])
- **Operating systems** 25 references ([1370]-[1394])
- **Software** 145 references ([1395]-[1539])
- **Software testing** 107 references ([1540]-[1646])
- **Sorting** 3 references ([1647]-[1649])

Observe that each reference is included (by the computer) only to one of the above classes (see the queries for classification in table 2.1; the textual order in the query gives priority for classes).

### 3.1 Publication type

This bibliography contains published contributions including reports and patents. All unpublished manuscripts have been omitted unless accepted for publication. In addition theses, PhD, MSc etc., are also included whether or not published somewhere.

Table 3.1 gives the distribution of publication type of the whole bibliography. Observe that the number of journal articles may also include articles published or to be published in unknown forums.

<i>type</i>	<i>number of items</i>
book	22
section of a book	3
part of a collection	60
journal article	390
proceedings article	1023
report	67
manual	1
PhD thesis	34
MSc thesis	32
<i>others</i>	22
<i>total</i>	1654

Table 3.1: Distribution of publication type.

### 3.2 Annual distribution

Table 3.2 gives the number of genetic algorithms in computer science papers published annually. The annual distribution is also shown in fig. 3.1. The average annual growth of GA papers has been approximately 40 % during late 70's - early 90's.

### 3.3 Classification

<i>year</i>	<i>items</i>	<i>year</i>	<i>items</i>
1958	1	1959	1
1960	0	1961	0
1962	0	1963	0
1964	0	1965	0
1966	1	1967	0
1968	0	1969	0
1970	0	1971	0
1972	0	1973	0
1974	1	1975	0
1976	0	1977	0
1978	0	1979	0
1980	0	1981	2
1982	0	1983	0
1984	0	1985	1
1986	5	1987	5
1988	3	1989	1
1990	18	1991	36
1992	45	1993	84
1994	176	1995	166
1996	204	1997	213
1998	94	1999	108
2000	91	2001	66
2002	61	2003	60
2004	11	2005	20
2006	18	2007	23
2008	20	2009	21
2010	17	2011	18
2012	20	2013	31
2014	12		
<i>total</i>			1654

Table 3.2: Annual distribution of contributions.

Every bibliography item has been given at least one describing keyword or classification by the editor of this bibliography. Keywords occurring most are shown in table 3.3.

### 3.4 Authors

Table 3.4 gives the most productive authors.

<i>Total</i>	1453
genetic programming	913
testing	125
graphs	107
databases	93
software testing	76
cellular automata	75
implementation	55
image processing	54
machine learning	53
automata	48
analysing GP	47
engineering	44
neural networks	40
control	38
software	37
robotics	37
comparison	36
economics	35
computer science	31
parallel GA	28
scheduling	26
operating systems	25
review	24
electronics	23
data mining	23
coevolution	23
crossover	22
classification	22
signal processing	20
pattern recognition	18
patent	18
analysing GA	17
parallel GP	16
graph partitioning	16
agents	15
spectroscopy	14
system identification	13
regression	13
hybrid	13
optimization	12
materials	12
computer graphics	12
VLSI	12
VLSI design	12
quantum computing	11
manufacturing	11
graphics	11
coding	11
time series	10
medicine	10
imaging	10
others	3310

Table 3.3: The most popular subjects.

total number of authors	2145
Koza, John R.	85
Banzhaf, Wolfgang	31
Iba, Hitoshi	30
Andre, David	25
Nordin, Peter	25
Bennett III, Forrest H.	24
Keane, Martin A.	23
Mantere, Timo	21
Alander, Jarmo T.	19
Garis, Hugo de	19
Poli, Riccardo	19
Wong, Man Leung	17
Langdon, William B.	16
Chen, Shu-Heng	14
Leung, Kwong Sak	14
Ryan, Conor	14
Räihä, Outi	14
Handley, Simon G.	13
Yeh, Chia-Hsuan	13
Brezocnik, Miran	12
O'Reilly, Una-May	12
Rice, James P.	12
Angeline, Peter J.	11
Koskimies, Kai	11
Tomassini, Marco	11
Crutchfield, James P.	10
Willis, Mark J.	10
12 authors	9
6 authors	8
4 authors	7
13 authors	6
22 authors	5
42 authors	4
80 authors	3
305 authors	2
1634 authors	1

Table 3.4: The most productive genetic algorithms in computer science authors.

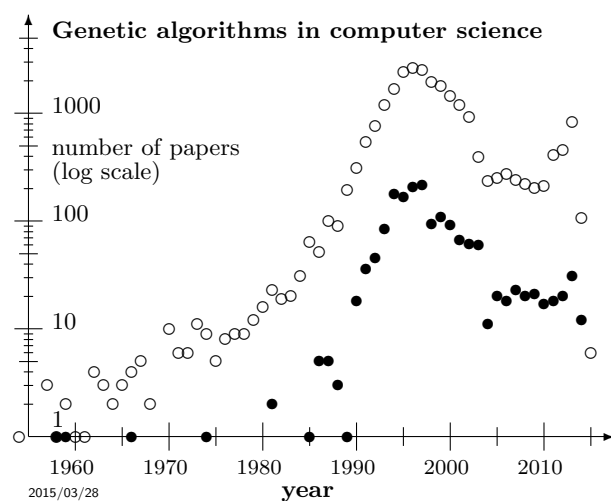


Figure 3.1: The number of papers applying **genetic algorithms in computer science** ( $\bullet$ ,  $N = 1660$ ) and total GA papers ( $\circ$ ,  $N = 23682$ ). Observe that the last few years are most incomplete in the database.

### 3.5 Geographical distribution

Table 3.5 gives the geographical distribution of authors, when the country of the author was known. Over 80% of the references of the GA source database are classified by country.

2015/03/28 <i>country</i>	<i>special</i>		<i>comparison</i>		<i>all</i>	
	<i>n</i>	%	$\delta[\%]$	$\Delta[\%]$	<i>N</i>	%
<i>Total</i>	1525	100.00			22073	100.00
United States	492	32.26	+6.09	+23	5776	26.17
United Kingdom	194	12.72	+2.93	+30	2162	9.79
Japan	96	6.30	-5.00	-44	2494	11.30
Germany	94	6.16	-0.33	-5	1432	6.49
Finland	68	4.46	+0.41	+10	893	4.05
China	46	3.02	-2.81	-48	1286	5.83
France	42	2.75	+0.22	+9	559	2.53
Spain	40	2.62	+0.51	+24	465	2.11
Australia	35	2.30	-0.12	-5	534	2.42
Sweden	31	2.03	+1.45	+250	128	0.58
Taiwan	30	1.97	-0.35	-15	511	2.32
Canada	29	1.90	+0.27	+17	359	1.63
India	26	1.70	-0.47	-22	480	2.17
Switzerland	19	1.25	+0.40	+47	187	0.85
The Netherlands	19	1.25	+0.28	+29	215	0.97
Italy	17	1.11	-1.70	-60	621	2.81
Poland	17	1.11	+0.24	+28	192	0.87
South Korea	17	1.11	-1.13	-50	494	2.24
Brazil	16	1.05	-0.04	-4	241	1.09
Slovenia	14	0.92	+0.62	+207	66	0.30
<i>Others</i>	139	9.13	-0.29	-3	2082	9.42

Table 3.5: The geographical distribution of the authors working on genetic algorithms in computer science ( $n$ ) compared ( $\delta$  and  $\Delta$ ) to all authors in the field of GAs ( $N$ ). In the *comparison* column:  $\delta\% = \%special - \%all$  and  $\Delta = (1 - \frac{nN_{Total}}{Nn_{Total}}) \times 100\%$ .  $\Delta$  is the relative (%) deviation from the expected number of special papers. Observe that joint papers may have authors from several countries and that not all authors have been attributed to a country.

You can find a World map showing the geographical distribution of the authors of the papers at <http://lipas.uwasa.fi/~TAU/reports/report94-1/GAworldMap.html?ABBR=CS>.

### 3.6 Conclusions and future

The editor believes that this bibliography contains references to most genetic algorithms in computer science contributions upto and including the year 1998 and the editor hopes that this bibliography could give some help to those who are working or planning to work in this rapidly growing area of genetic algorithms.



# Chapter 4

## Indexes

### 4.1 Books

The following list contains all items classified as books.

Advances in Genetic Programming, [530]  
Automatic Re-Engineering of Software Using Genetic Programming, [1059]  
Computational Intelligence in Software Quality Assurance, [1595, 1542]  
Computer Viruses, Artificial Life and Evolution, [155]  
Data Mining Using Grammar Based Genetic Programming and Applications, [189]  
Evolution of Parallel Cellular Machines, [102]  
Evolutionary Computation and Optimization Algorithms in Software Engineering: Applications and Techniques, [1459]  
Evolving images, [1207]  
From Natural to Artificial Swarm Intelligence, [1332]  
Genetic Programming II, Automatic Discovery of Reusable Programs, [629]  
Genetic Programming III, [1081]  
Genetic Programming ~ An Introduction, [1009]  
Genetic Programming and Data Structures, [1046]  
Genetic Programming: On Programming Computers by Means of Natural Selection and Genetics, [1176]  
Illustrating Evolutionary Computation with Mathematica, [365]  
It's Alive! The New Breed of Living Computer Programs, [159]  
Modeling Nature, Cellular Automata Simulations with MATHEMATICA, [74]  
New Ideas in Optimization, [1063]  
Telecommunications Optimization: Heuristic and Adaptive Techniques, [187]  
Theory of Self-Reproducing Automata, [136]

*Principia Evolvica*, Simulierte Evolution mit Mathematica, [878]

total 21 books

### 4.2 Journal articles

The following list contains the references to every journal article included in this bibliography. The list is arranged in alphabetical order by the name of the journal.

ACM Computing Surveys, [1546]  
Acta Electronica Sinica (China), [1316]  
Actas de los Talleres de las Jornadas de Ingeniera del Software y Bases de Datos, [1434, 1448]  
Adaptive Behavior, [792, 1182]  
Advances in Applied Mathematics, [1239]  
AI Applications, [270]  
AI EDAM-Artificial Intelligence for Engineering Design Analysis and Manufacturing, [508]  
AI Expert, [1497, 1499, 649]  
Analytica Chimica Acta, [472]  
Analytical Chemistry, [944]  
Ann. Oper. Res. (Netherlands), [238]  
Annals of Operations Research, [340, 1299]  
Appl. Intell., Int. J. Artif. Intell. Neural Netw. Complex Probl.-Solving Technol. (Netherlands), [1037]  
Applied and Computational Mathematics, [1426]  
Applied and Environmental Microbiology, [395]  
Applied Intelligence, [1039]  
Applied Mechanics and Materials, [1491]  
Applied Optics, [1245]  
Applied Soft Computing, [363, 425, 1646]  
Arpakannus, [1575]  
Artif. Life Robot. (Japan), [1336]  
Artificial Intelligence, [305, 523, 523]  
Artificial Intelligence in Engineering (UK), [1094]

- Artificial Intelligence Review, [399]  
 Artificial Life, [515]  
 Asian Computer Weekly, [208]  
 Aust. Comput. J. (Australia), [260]  
 Australian Journal of Intelligent Information Processing Systems, [411]  
 Automatisierungstechnik, [870, 1010]  
 BioSystems, [101]  
 BMC Bioinformatics, [450]  
 BT Technology Journal, [191]  
 BYTE, [579]  
 Chin. J. Electron. (China), [956]  
 Communications of the ACM, [1388, 1102, 288]  
 Comput. Econ. (Netherlands), [809]  
 Comput. Educ. J. (USA), [1517]  
 Comput. Ind. (Netherlands), [1008]  
 Computational Materials Science, [491]  
 Computer Graphics, [1203]  
 Computer Journal, [1284]  
 Computer Physics Communications, [1053, 1057]  
 Computer Science Review, [1602]  
 Computers and Chemical Engineering, [393]  
 Computers in Chemical Engineering, [829, 925, 1330]  
 Computers & Industrial Engineering, [1281, 280]  
 Computers & Mathematics with Applications, [849]  
 Computers & Operations Research, [1416, 1428, 1254, 158, 162]  
 Concurrency Pract. Exper., [1377]  
 Concurrency: Practice and Experience, [1382]  
 Control Cybern. (Poland), [1270, 935]  
 D-Lib Mag (USA), [257]  
 Datalogiske Skr. (Denmark), [245]  
 DIMACS, [1267]  
 Discover, [1410]  
 Dr. Dobb's Journal, [1251, 1255, 261]  
 Electr. Power Syst. Res. (Switzerland), [881]  
 Electric Power Systems Research, [1529]  
 Electronics Letters, [1223, 833, 951, 1038]  
 Engineering Applications of Artificial Intelligence, [1613]  
 Euromag, [482]  
 European Journal of Operational Research, [419, 1334]  
 European Journal of Operations Research (Netherlands), [943]  
 European Journal of Scientific Research, [1479]  
 Evolutionary Computation, [590, 676, 1647, 715, 1036, 1048, 1135, 1351]  
 Expert Systems, [1238]  
 Expert Systems and Applications, [1419]  
 Expert Systems Appl. (UK), [1028]  
 Expert Systems with Applications, [1604, 517]  
 Food Science & Technology, [367]  
 Frontiers of Computer Science, [1611]  
 Future Generation Computer Systems, [264]  
 Fuzzy Sets and Systems, [302]  
 Gaodeng Xuexiao Huaxue Xuebao, [1340]  
 Genetic Programming and Evolvable Machines, [313, 359, 372, 373, 381, 382, 386, 387, 396, 402, 403, 404, 405, 408, 424, 428, 493, 501, 506]  
 Genome Inf. Ser., [1024]  
 Global Journal of Computer Science and Technology, [1460]  
 IBM Journal, [1128]  
 IBM Journal of Research and Development, [1129]  
 IEE Communications Letters, [421]  
 IEE Proceedings - Circuits, Devices, and Systems, [375]  
 IEE Proceedings - Computer and Digital Techniques, [15]  
 IEE Proceedings E: Comput. Digit. Tech., [1342]  
 IEE Proceedings, Computer and Digital Techniques, [23]  
 IEE Proceedings, Computers and Digital Techniques, [69]  
 IEE Proceedings: Software, [1559]  
 IEEE Aerospace and Electronic Systems Magazine, [370]  
 IEEE Bulletin on Database Engineering, [278]  
 IEEE Computer Graphics and Applications, [1349]  
 IEEE Engineering in Medicine and Biology Magazine, [193]  
 IEEE Expert, [639, 663, 673, 692, 1558]  
 IEEE Geoscience and Remote Sensing Letters, [500]  
 IEEE Signal Processing Letters, [323]  
 IEEE Trans. Comput.-Aided Des. Integr. Circuits Syst. (USA), [105]  
 IEEE Trans. Parallel Distrib. Syst. (USA), [1391]  
 IEEE Transactions on Circuits and Systems-I: Fundamental Theory and Applications, [420]  
 IEEE Transactions on Computers, [1289, 1304]  
 IEEE Transactions on Evolutionary Computation, [318, 16, 354, 378, 380, 34, 90, 993, 1003]  
 IEEE Transactions on Evolutionary Computing, [486, 516]  
 IEEE Transactions on Geoscience and Remote Sensing, [410]  
 IEEE Transactions on Industrial Electronics, [1370, 384]  
 IEEE Transactions on Knowledge and data engineering, [217]  
 IEEE Transactions on Knowledge and Data Engineering, [237]  
 IEEE Transactions on Pattern Analysis and Machine Intelligence, [1232, 256]  
 IEEE Transactions on Software Engineering, [1568, 1603, 1481, 1481, 1486, 1486]  
 IEEE Transactions on Systems, Man, and Cybernetics, [18, 19]  
 IEEE Transactions on Systems, Man, and Cybernetics A, Systems Humans, [1011]  
 IEEE Transactions on Systems, Man, and Cybernetics B, Cybernetics, [1321]  
 IEEE Transactions on Wireless Communications, [518]  
 IEICE Transactions on Fundamentals of Electronics, Communications and Computer Science, [1318, 1044]  
 IET Biometrics, [1474]



- IFIP Transactions A, Computer Science and Technology (Netherlands), [1495]
- Inf. Process. Lett. (Netherlands), [227]
- Inf. Software Technol., [199]
- Inf. Syst. Eng. (Netherlands), [755]
- Inform. Autom. (Spain), [181]
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## 4.3 Theses

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Problem solving arithmetic device and method introduction  
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## 4.5 Patents

The following list contains the names of the patents of genetic algorithms in computer science. The list is arranged in alphabetical order by the name of the patent.

A non-linear genetic algorithms for solving problems, [1173, 1184]

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A non-linear genetic process for problem solving using spontaneously emergent self-replicating and self-improving entities, [1181]

Adaptive problem solving method and apparatus utilizing evolutionary computation techniques, [1567]

Automatic programming device, automatic programming method, and recording medium, [1095]

Automatic software testing tool, [1532]

Distributed genetic programming, [1078]

Estimating remaining useful life from prognostic features discovered using genetic programming, [527]

Method and apparatus for automated design of complex structures using genetic programming, [1103]

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Non-linear genetic algorithms for solving problems, [1157]

Non-linear genetic algorithms for solving problems by finding a fit composition of functions, [1161]

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## 4.6 Authors

The following list contains all genetic algorithms in computer science authors and references to their known contributions.

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## Notations

†(ref) = the bibliography item does not belong to my collection of genetic papers.

(ref) = citation source code. ACM = ACM Guide to Computing Literature, EEA = Electrical & Electronics Abstracts, BA = Biological Abstracts, CCA = Computers & Control Abstracts, CTI = Current Technology Index, EI = The Engineering Index (A = Annual, M = Monthly), DAI = Dissertation Abstracts International, P = Index to Scientific & Technical Proceedings, PA = Physics Abstracts, PubMed = National Library of Medicine, BackBib = Thomas Bäck's unpublished bibliography, Fogel/Bib = David Fogel's EA bibliography, etc

\* = only abstract seen.

? = data of this field is missing (BiBTeX-format).

The last field in each reference item in **Teletype** font is the BiBTeXkey of the corresponding reference.

# Appendix A

## Bibliography entry formats

This documentation was prepared with L<sup>A</sup>T<sub>E</sub>X and reproduced from camera-ready copy supplied by the editor. The ones who are familiar with B<sub>I</sub>B<sub>T</sub>E<sub>X</sub> may have noticed that the references are printed using `abbrv` bibliography style and have no difficulties in interpreting the entries. For those not so familiar with B<sub>I</sub>B<sub>T</sub>E<sub>X</sub> are given the following formats of the most common entry types. The optional fields are enclosed by "[ ]" in the format description. Unknown fields are shown by "?". † after the entry means that neither the article nor the abstract of the article was available for reviewing and so the reference entry and/or its indexing may be more or less incomplete.

**Book:** Author(s), *Title*, Publisher, Publisher's address, year.

**Example**

John H. Holland. *Adaptation in Natural and Artificial Systems*. The University of Michigan Press, Ann Arbor, 1975.

**Journal article:** Author(s), Title, *Journal*, volume(number): first page – last page, [month,] year.

**Example**

David E. Goldberg. Computer-aided gas pipeline operation using genetic algorithms and rule learning. Part I: Genetic algorithms in pipeline optimization. *Engineering with Computers*, 3(?):35–45, 1987.  
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**Note:** the number of the journal unknown, the article has not been seen.

**Proceedings article:** Author(s), Title, editor(s) of the proceedings, *Title of Proceedings*, [volume,] pages, location of the conference, date of the conference, publisher of the proceedings, publisher's address.

**Example**

John R. Koza. Hierarchical genetic algorithms operating on populations of computer programs. In N. S. Sridharan, editor, *Eleventh International Joint Conference on Artificial Intelligence (IJCAI-89)*, pages 768–774, Detroit, MI, 20.-25. August 1989. Morgan Kaufmann, Palo Alto, CA. † .

**Technical report:** Author(s), Title, type and number, institute, year.

**Example**

Thomas Bäck, Frank Hoffmeister, and Hans-Paul Schwefel. Applications of evolutionary algorithms. Technical Report SYS-2/92, University of Dortmund, Department of Computer Science, 1992.





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[http://lipas.uwasa.fi/~TAU/reports/report94-1/ga\\*bib.pdf](http://lipas.uwasa.fi/~TAU/reports/report94-1/ga*bib.pdf) files.
- Covers all sciences and engineering fields, from basic theory to applications.
- Several indexes and statistical summaries.
- See what problems evolution can solve for you!

Global optimisation and search heuristics called genetic algorithm mimics evolution in nature using recombination and selection from a set of solution trials called population. One of the most prominent attractive features of genetic algorithms from the practical point of view of software techniques is their simplicity, which makes them easy to implement and tailor to solve practical search and optimisation problems.

In spite of the seemingly simple processing, the genetic algorithms are good at solving some problems that are known to be hard. The simplicity, generality, flexibility, parallelism, and the good problem solving capability have made genetic algorithm very popular among various disciplines desperately searching methods to solve difficult optimisation problems.

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Observe that our server has also a selection of our papers on genetic algorithms and other computational topics. See our bibliographies or file [ftp.uwasa.fi/cs/README](ftp://lipas.uwasa.fi/cs/README) for further details.

<i>file</i>	<i># refs</i>	<i>updated</i>	<i>contents</i>
ga90bib.ps.Z			GA in 1990
⋮	⋮	⋮	⋮
ga02bib.ps.Z	557		GA in 2002
gaACOUSTICSbib.pdf	235	2015/03/27	GA in acoustics
gaAIbib.pdf	2566	2013/06/14	GA in artificial intelligence
gaAERObib.pdf	929	2015/03/27	GA in aerospace
gaAGRObib.pdf	405	2012/08/01	GA in agriculture
gaALIFEbib.pdf	184	2014/05/06	GA in artificial life
gaARTbib.pdf	174	2014/05/06	GA in art and music
gaAUSbib.pdf	720	2013/05/14	GA in Australia and New Zealand
gaBASICSbib.pdf	1224	2015/03/28	Basics of GA
gaBIObib.pdf	1635	2014/05/06	GA in biosciences including medicine
gaCADbib.pdf	1407	2012/07/30	GA in Computer Aided Design
gaCHEMbib.pdf	1255	2015/03/28	GA in chemical sciences ; previously in <a href="#">gaCHEMPHYSbib.ps.Z</a>
gaCHEMPHYSbib.ps.Z	2277		GA in chemistry and physics; divided into <a href="#">gaCHEMbib.ps.Z</a> and <a href="#">gaPHYSbib.ps.Z</a> 2002
gaCIVILbib.pdf	1121	2014/05/06	GA in civil, structural, and mechanical engineering
gaCODEbib.pdf	392	2014/05/06	GA coding
gaCOEVObib.pdf	270	2015/03/28	co- and differential evolution GA
gaCONTROLbib.pdf	1943	2015/01/12	GA in control and process engineering
gaCSbib.pdf	1660	2015/03/28	GA in comp. sci. (incl. databases, /mining, software testing and GP)
gaEARLYbib.pdf	723	2014/04/28	GA in early years (upto 1989)
gaEAST-EURObib.ps.Z	679	2003/07/09	GA in the Eastern Europe
gaECObib.pdf	1569	2012/07/16	GA in economics and finance
gaECOLbib.pdf	177	2012/07/16	GA in ecology and biodiversity
gaELMAbib.pdf	574	2012/07/20	GA in electromagnetics
gaESbib.pdf	464	2008/08/13	Evolution strategies
gaFAR-EASTbib.ps.Z	1556	2011/12/29	GA in the Far East (excl. Japan)
gaFEMbib.pdf	90	2014/05/06	GA & FEM
gaFINbib.pdf	891	2013/05/22	GA in Finland
gaFPGAbib.pdf	456	2015/03/20	GA & FPGA
gaFRAbib.ps.Z	540	2011/12/29	GA in France
gaFTPbib.ps.Z	1353	2003/07/09	GA papers available via web (ftp and www)
gaFUZZYbib.pdf	1562	2015/03/20	GA and fuzzy logic
gaGAMEbib.pdf	140	2014/05/06	GA and games
gaGEObib.pdf	458	2014/05/06	GA in geosciences
gaGERbib.ps.Z	1586	2004/09/22	GA in Germany, Austria, and Switzerland
gaGPbib.pdf	1006	2012/07/30	genetic programming
gaIMPLEbib.pdf	1500	2012/07/30	implementations of GA
gaINDIAbib.ps.Z	276	2003/05/23	GA in India
gaINVERSEbib.pdf	291	2010/01/08	GA in inverse problems
gaIREGbib.pdf	218	2014/07/04	image registration
gaISbib.pdf	87	2009/08/17	immune systems
gaJAPANbib.ps.Z	2475	2013/05/14	GA in Japan
gaLCSbib.pdf	211	2012/08/08	Learning Classifier Systems
gaLASERbib.pdf	58	2009/07/31	GA and lasers
gaLATINbib.ps.Z	1099	2015/03/27	GA in Latin America, Portugal & Spain
gaLOGISTICSbib.pdf	741	2014/05/06	GA in logistics (incl. TSP)
gaMANUbib.pdf			GA in manufacturing
gaMATHbib.pdf	846	2009/07/27	GA in mathematics
gaMEDICINEbib.pdf	1162	2014/07/18	GA in medicine
gaMEDITERbib.ps.Z	1810	2003/07/09	GA in the Mediterranean
gaMICRObib.pdf	83	2008/03/31	GA in microscopy & microsystems
gaMILbib.pdf	113	2009/08/17	GA in military applications
gaMLbib.pdf	1231	2012/08/08	GA in machine learning
gaMSEbib.pdf	575	2013/08/15	GA in materials
gaNANObib.pdf	117	2012/07/17	GA in nanotechnology
gaNIRbib.pdf	267	2013/11/18	GA in NIRS (spectroscopy)
gaNNbib.pdf	1979	2015/03/20	GA in neural networks
gaNORDICbib.pdf	1148	2015/02/15	GA in Nordic countries
gaOPTICSbib.pdf	2168	2014/04/28	GA in optics and image processing
gaOPTIMbib.pdf	923	2003/07/09	GA and optimization (only a few refs)
gaORbib.pdf	1750	2014/12/10	GA in operations research

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gaPARAbib.pdf	833	2012/07/30	Parallel and distributed GA
gaPARETObib.pdf	469	2009/03/24	Pareto optimization
gaPATENTbib.pdf	475	2015/03/27	GA patents
gaPATTERNbib.pdf	1654	2012/09/21	GA in pattern recognition incl. LCS
gaPHYSbib.pdf	2313	2008/04/07	GA in physical sciences ; previously in gaCHEMPHYSbib.ps.Z
gaPIEZObib.pdf	57	2012/07/18	GA & piezo
gaPOWERbib.pdf	1017	2015/02/15	GA in power engineering
gaPROTEINbib.pdf	491	2008/03/12	GA in protein research
gaPSObib.pdf	92	2013/08/15	Particle Swarm Optimisation
gaQCbib.pdf	547	2011/03/09	quantum computing
gaREMOTEbib.pdf	302	2012/07/20	GA in remote sensing
gaROBOTbib.pdf	775	2009/07/27	GA in robotics
gaSAbib.pdf	331	2009/07/24	GA and simulated annealing
gaSCHEDULINGbib.pdf	868	2014/05/14	GA in scheduling
gaSELECTIONbib.ps.Z	295	2009/07/27	Selection in GAs
gaSIGNALbib.pdf	2587	2012/07/27	GA in signal and image processing
gaSIMULAbib.pdf	1037	2009/07/24	GA in simulation
gaTELEbib.pdf	840	2009/07/27	GA in telecom
gaTHEORYbib.pdf	2654	2012/09/17	Theory and analysis of GA
gaTHESEsbib.pdf	578	2009/01/07	PhD etc theses
gaVAASAbib.pdf	284	2010/08/17	GA in Vaasa
gaVLSIbib.pdf	799	2012/07/16	GA in electronics, VLSI design and testing
gaUKbib.ps.Z	1998	2008/05/22	GA in United Kingdom
gaXbib.ps.Z	129	2013/08/15	GA & X-rays

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