An Indexed Bibliography of Genetic Algorithm Implementations

compiled by

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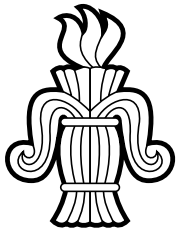

DRAFT July 23, 1999

available via anonymous ftp: site ftp.uwasa.fi directory cs/report94-1 file gaIMPLEbib.ps.Z

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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 '*'.

Contents

List of Tables

Chapter 1

Preface

> "Living organism 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 (July 23, 1999) contained 11380 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 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 – Apr. 1998 (except May -95)
- ChA: *Chemical Abstracts:* Jan. 1997 - Dec. 1998
- 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)
- N: *Scientific and Technical Aerospace Reports:* Jan. 1993 - Dec. 1995 (except Oct. 1995)
- P: *Index to Scientific & Technical Proceedings:* Jan. 1986 – May 1998 (except Nov. 1994)
- PA: *Physics Abstracts:* Jan. 1997 – Sep. 1998

1.1 Your contributions erroneous or missing?

The bibliography database is updated on a regular basis and certainly contains many errors and inconsistences. 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 algorithm implementations 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.

For further instructions and information see `ftp.uwasa.fi/cs/GAbib/README`.

1.1.1 How to cite this report?

The complete BiBTEX record for this report is shown below:

```
@TECHREPORT{gaIMPLEbib,
     KEY = "IMPLE",
     ANNOTE = "*on,*FIN,bibliography /special",
     AUTHOR = "Jarmo T. Alander",
     TITLE = "Indexed Bibliography of Genetic Algorithm Implementations",
     INSTITUTION = "University of Vaasa, Department of Information Technology and Production Economics",
     TYPE = "Report",
     NUMBER = "94-1-IMPLE",
     NOTE = "(\ftp{ftp.uwasa.fi}{cs/report94-1}{gaIMPLEbib.ps.Z})",
     YEAR = 1995
}
```

You can also use the BiBTEX file `GASUB.bib`, which is available in our ftp site `ftp.uwasa.fi` in directory `cs/report94-1` and contains records for all GA subbibliographies.

1.2 How to get this report via `Internet`?

Versions of this bibliography are available via anonymous `ftp` and `www` from the following sites:

media	*country*	*site*	*directory*	*file*
`ftp`	Finland	`ftp.uwasa.fi`	`/cs/report94-1`	`gaIMPLEbib.ps.Z`
`www`	Finland	`http://www.cs.hut.fi`	`~ja/gaIMPLEbib`	`gaIMPLEbib.html`

Observe that these versions may be somewhat different and perhaps reduced as compared to this volume that you are now reading. Due to technical problems in transforming LATEXdocuments into `html` ones the `www` versions contain usually less information than the corresponding `ftp` ones. It is also possible that the `www` version is completely unreachable.

The directory also contains some other indexed GA bibliographies shown in table 1.1. 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 algorithm implementations 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, Joachim Born, Ralf Bruns, I. L. Bukatova, Thomas Bäck, David E. Clark, Carlos A. Coello Coello, Yuval Davidor, Dipankar Dasgupta, Marco Dorigo, J. Wayland Eheart, Bogdan Filipič, 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.

file	*contents*
ga90bib.ps.Z	GA in 1990
ga91bib.ps.Z	GA in 1991
ga92bib.ps.Z	GA in 1992
ga93bib.ps.Z	GA in 1993
ga94bib.ps.Z	GA in 1994
ga95bib.ps.Z	GA in 1995
ga96bib.ps.Z	GA in 1996
ga97bib.ps.Z	GA in 1997
ga98bib.ps.Z	GA in 1998
gaAIbib.ps.Z	GA in artificial intelligence
gaALIFEbib.ps.Z	GA in artificial life
gaARTbib.ps.Z	GA in art and music
gaAUSbib.ps.Z	GA in Australia
gaBASICSbib.ps.Z	Basics of GA
gaBIObib.ps.Z	GA in biosciences including medicine
gaCADbib.ps.Z	GA in Computer Aided Design
gaCHEMPHYSbib.ps.Z	GA in chemistry and physics
gaCONTROLbib.ps.Z	GA in control
gaCSbib.ps.Z	GA in computer science (incl. databases and GP)
gaDBbib.ps.Z	GA in databases
gaECObib.ps.Z	GA in economics and finance
gaENGbib.ps.Z	GA in engineering
gaESbib.ps.Z	Evolution strategies
gaFAR-EASTbib.ps.Z	GA in the Far East (Japan etc)
gaFRAbib.ps.Z	GA in France
gaFTPbib.ps.Z	GA papers available via ftp
gaFUZZYbib.ps.Z	GA and fuzzy logic
gaGERbib.ps.Z	GA in Germany
gaGPbib.ps.Z	genetic programming
gaIMPLEbib.ps.Z	implementations of GA
gaISbib.ps.Z	immune systems
gaJOURNALbib.ps.Z	journal articles
gaLATINbib.ps.Z	GA in Latin America, Portugal & Spain
gaLOGISTICSbib.ps.Z	GA in logistics
gaMANUbib.ps.Z	GA in manufacturing
gaMEDITERbib.ps.Z	GA in the Mediterranean
gaNNbib.ps.Z	GA in neural networks
gaNORDICbib.ps.Z	GA in Nordic countries
gaOPTIMIbib.ps.Z	GA and optimization (only a few refs)
gaOPTICSbib.ps.Z	GA in optics and image processing
gaORbib.ps.Z	GA in operations research
gaPARAbib.ps.Z	Parallel and distributed GA
gaPOWERbib.ps.Z	GA in power engineering
gaPROTEINbib.ps.Z	GA in protein research
gaROBOTbib.ps.Z	GA in robotics
gaSAbib.ps.Z	GA and simulated annealing
gaSIGNALbib.ps.Z	GA in signal and image processing
gaTHEORYbib.ps.Z	Theory and analysis of GA
gaTOP10bib.ps.Z	Authors having at least 10 GA papers
gaUKbib.ps.Z	GA in United Kingdom
gaVLSIbib.ps.Z	GA in VLSI design and testing

Table 1.1: Indexed GA subbibliographies.

Hatjimihail, Mark J. Jakiela, Richard S. Judson, Bryant A. Julstrom, Charles L. Karr, Akihiko Konagaya, Aaron Konstam, John R. Koza, Kristinn Kristinsson, D. P. Kwok, Gregory Levitin, Carlos B. Lucasius, Michael de la Maza, John R. McDonnell, J. J. Merelo, Laurence D. Merkle, Zbigniew Michalewics, Melanie Mitchell, David J. Nettleton, Volker Nissen, Ari Nissinen, Tomasz Ostrowski, Kihong Park, Nicholas J. Radcliffe, Colin R. Reeves, Gordon Roberts, David Rogers, Ivan Santibáñez-Koref, Marc Schoenauer, Markus Schwehm, Hans-Paul Schwefel, Michael T. Semertzidis, Moshe Sipper, William M. Spears, Donald S. Szarkowicz, El-Ghazali Talbi, Masahiro Tanaka, Leigh Tesfatsion, Peter M. Todd, Marco Tomassini, Andrew L. Tuson, Jari Vaario, Gilles Venturini, Hans-Michael Voigt, Roger L. Wainwright, D. Eric Walters, James F. Whidborne, Steward W. Wilson, Xin Yao, and Xiaodong Yin.

The editor also wants to acknowledge Elizabeth Heap-Talvela for her kind proofreading of the manuscript of this bibliography.

Chapter 2

Introduction

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 [7] have been implemented by the author mainly as sets of simple `awk` and `gawk` programs [8, 9].

string	*field*	*class*
`MANUAL`	`citeKey`	Implementation
`implementation /hardware`	`ANNOTE`	Implementation
`implementation`	`ANNOTE`	Implementation
`population size`	`ANNOTE`	Implementation
`crossover`	`ANNOTE`	Implementation
`mutation`	`ANNOTE`	Implementation
`fitness`	`ANNOTE`	Implementation
`coding`	`ANNOTE`	Implementation
`text book`	`ANNOTE`	Implementation
`gaPARAbib`	`citeKey`	Implementation
`gaGPbib`	`citeKey`	Implementation
`gaTHEORYbib`	`citeKey`	Implementation
`gaIMPLEbib`	`citeKey`	Implementation

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

Chapter 3

Statistical summaries

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

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

- **Implementation** 820 references ([10]-[829])

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; query order 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.

type	*number of items*
book	36
section of a book	3
part of a collection	26
journal article	228
proceedings article	423
report	65
manual	9
PhD thesis	16
MSc thesis	13
others	1
total	820

Table 3.1: Distribution of publication type.

3.2 Annual distribution

Table 3.2 gives the number of genetic algorithm implementations 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 almost the last twenty years.

year	*items*	*year*	*items*
1958	1	1959	1
1960	0	1961	0
1962	0	1963	0
1964	0	1965	0
1966	0	1967	0
1968	1	1969	0
1970	1	1971	0
1972	0	1973	0
1974	0	1975	2
1976	0	1977	0
1978	2	1979	0
1980	3	1981	0
1982	1	1983	1
1984	1	1985	4
1986	0	1987	8
1988	7	1989	14
1990	20	1991	45
1992	77	1993	95
1994	114	1995	139
1996	136	1997	94
1998	38	1999	15
total			820

Table 3.2: Annual distribution of contributions.

3.3 Classification

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.

implementation	276
crossover	136
coding	117
parallel GA	108
population size	89
analysing GA	73
mutation	60
comparison	43
fitness	41
genetic programming	39
protein folding	35
neural networks	33
optimization	32
TSP	31
engineering	28
text book	27
scheduling	23
generations	22
evolution strategies	17
chemistry	17
image processing	16
control	13
mutations	12
CAD	11
hybrid	10
graphs	10
fitness function	10
others	1921

Table 3.3: The most popular subjects.

3.4 Authors

Table 3.4 gives the most productive authors.

total number of authors	1190
Goldberg, David E.	14
Alander, Jarmo T.	12
Fogarty, Terence C.	11
1 author	9
3 authors	8
4 authors	7
3 authors	6
22 authors	5
18 authors	4
36 authors	3
152 authors	2
947 authors	1

Table 3.4: The most productive genetic algorithm implementations authors.

3.5 Geographical distribution

The following table gives the geographical distribution of authors, when the country of the author was known. Over 80% of the references of the source database are classified by country.

country	*abs*	*%*
Total	820	100.00
United States	273	33.29
United Kingdom	95	11.59
Germany (incl. DDR)	86	10.49
Japan	55	6.71
Unknown country	42	5.12
Finland	28	3.41
Australia	25	3.05
Italy	19	2.32
Canada	16	1.95
China (incl. Hong Kong)	16	1.95
Spain	16	1.95
India	11	1.34
The Netherlands	11	1.34
South Korea	10	1.22
Czech Republic	8	0.98
Russia	8	0.98
Austria	7	0.85
France	7	0.85
Taiwan R.o.C.	7	0.85
Ireland	6	0.73
Sweden	6	0.73
Poland	5	0.61
Switzerland	5	0.61
Denmark	4	0.49
Israel	4	0.49
Belgium	3	0.37
Romania	3	0.37
Hungary	2	0.24
New Zealand	2	0.24
Portugal	2	0.24
Singapore	2	0.24
Turkey	2	0.24
Brazil	1	0.12
Croatia	1	0.12
Republic of South Africa	1	0.12
Saudi Arabia	1	0.12
Slovak Republic	1	0.12
Thailand	1	0.12
Ukraina	1	0.12

Table 3.5: The geographical distribution of the authors. Observe that joint papers may have authors from several countries. This decreases the unknown country count (= all - known countries).

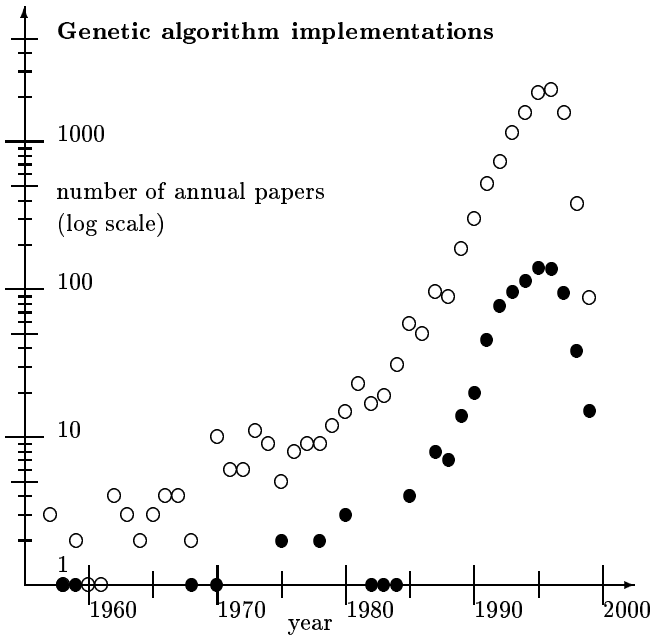

Figure 3.1: The number of papers applying **genetic algorithm implementations** (•) ∘ = total GA papers. Observe that the last two years are most incomplete in the database.

3.6 Conclusions and future

The editor believes that this bibliography contains references to most genetic algorithm implementations 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.

total 33 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.

Biochemical Journal, [709]
Biochemistry, [218, 621]
Bioinformatics, [503]
Biological Cybernetics, [234, 686, 758, 250, 336]
BioSystems, [164, 44]
BYTE, [382]
Chemical Physics Letters, [792]
Chromatographia, [770]
Complex Systems, [13, 156, 184, 326, 121, 761, 332]
Complex Systems (USA), [47]
Comput. Appl. Biosci., [604]
Comput. Ind. (Netherlands), [487]
Computer, [392]
Computer Applications in the Biosciences (CABIOS), [464]
Computer Graphics, [602]
Computer Methods and Programs in Biomedicine, [407]
Computer Physics Communications, [785]
Computer-Aided Innovation of New Materials, [696]
Computers and Geotechnics, [790]
Computers & Chemistry, [372, 391, 394, 104]
Computers & Industrial Engineering, [144, 146, 41]
Computers & Mathematics with Applications, [532, 765]
Computers & Operations Research, [720, 152, 725, 176, 179, 668, 310]
Control Engineering Practice, [400]
Cybernetics and Systems, [330]
Discrete Applied Mathematics, [111]
Dr. Dobb's Journal, [373, 484]
Electric Power Systems Research, [360]
Electronic Engineering Times, [617]
Electronics Letters, [30, 351, 779]
Engineering Applications of Artificial Intelligence, [535]
Eur. J. Oper. Res. , [669]
European Journal of Operational Research, [49, 197, 230, 749]
European Journal of Operations Research, [772]
Europhysics Letters, [748]
Evolutionary Computation, [276, 163, 180, 499]
Future Generation Computer Systems, [539]
Geophysical Journal International, [774]
Geophysics, [773]
IBM Journal, [541]
IBM Journal of Research and Development, [542]
IEE Proc., Commun. (UK), [72]
IEE Proc., Comput. Digit. Tech. (UK), [488]
IEE Proceedings J: Optoelectronics, [129]
IEE Proceedings, Computers and Digital Techniques, [147]
IEEE Control Systems Magazine, [776]
IEEE Engineering in Medicine and Biology, [707]
IEEE Transactions on Communications, [65]
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, [521]
IEEE Transactions on Evolutionary Computing, [227]
IEEE Transactions on Industrial Electronics, [51, 100]
IEEE Transactions on Knowledge and Data Engineering, [303]
IEEE Transactions on Magnetics, [398, 456]
IEEE Transactions on Neural Networks, [365, 723, 157]
IEEE Transactions on Power Systems, [203, 480, 116, 581]
IEEE Transactions on Systems, Man, and Cybernetics, [631, 204, 755]
IEICE Transactions on Fundamentals of Electronics Communications and Computer Sciences, [150]
Image and Vision Computing, [764]
Inf. Sci. (USA), [96]
Information Processing & Management, [232]
Information Sciences, [623, 744]
Int. J. Mod. Phys. C, Phys. Comput. (Singapore), [356, 425]
Int.J. Syst. Sci. (UK), [231]
International Journal of Electronics, [258]
International Journal of Intelligent Systems, [210]
International Journal of Production Research, [555]
International Journal of Quantum Chemistry, [329]
J. KISS(A), Comput. Syst. Theory (South Korea), [442]
J. Korea Inst. Telemat. Electron. (South Korea), [730]
Journal of Chemical Information and Computer Sciences, [458, 747, 757]
Journal of Chemical Physics, [102]
Journal of Computational Chemistry, [734, 767]
Journal of Computer-Aided Molecular Design, [713]
Journal of Molecular Biology, [777]
Journal of Optimization Theory and Applications, [97]
Journal of Parallel and Distributed Computing, [489, 492]
Journal of Soviet Mathematics, [692, 693]
Journal of Structural Engineering, [417]
Journal of Structural Engineering - ASCE, [558]
Journal of Systems Architecture, [452]
Journal of the Chemical Society - Faraday Transactions, [221]
Journal of the Chemical Society – Perkin Transactions 1, [740]
Journal of Theoretical Biology, [397, 419, 335]
Kwart. Elektron. Telekomun. (Poland), [661]
Kybernetes, [695]
Lettre du Transputer et des Calculateurs Distribués, [609]
Machine Learning, [114, 789]
Math. Comput. Model. (UK), [636, 298]
Mathematical Biosciences, [257]
Mathware & Soft Computing, [45]
Mechatronics, [381, 473]

Memoirs of the Faculty of Engineering, Okayama University, [639]

Microprocessing and Microprogramming EURO-Micro Journal, [528]

Mikroelektronika (Russia), [343]

Nanjing University of Aeronautics & Astronautics, Transactions, [84]

Nature, [704, 705, 711, 712]

Neural Networks, [86]

Neural Process. Lett. (Netherlands), [50]

Nippon Kikai Gakkai Ronbunshu A Hen, [646]

Nuclear Technology, [483]

Operations Research, [212]

Parallel Computing, [328]

Parallel Processing Letters, [239]

Pattern Recognition, [222, 681]

Physical Review E, [746, 680]

Physical Review Letters, [766]

Proc. Inst. Mech. Eng. I, J. Syst. Control Eng. (UK), [673]

Proceedings of the National Academy of Sciences of the United States of America, [719, 229, 702, 706, 139, 140, 141]

Protein Engineering, [375]

Protein Science, [736]

Proteins: Structure, Function, and Genetics, [745]

Robotics and Autonomous Systems, [468]

Russian Microelectronics (USA), [422]

Science, [710]

Scientific American, [589]

Scientific Computing World, [478]

SIAM News, [608]

SIGICE Bulletin, [385]

Signal Processing, [593]

SIGPLAN OOPS Messenger, [620]

SuperMenu, [550]

The International Journal of Mathematical Applications in Science and Technology, [35]

The Mathematica Journal, [556]

Trans. Inst. Electr. Eng. Jpn. C (Japan), [181]

Transaction of the Institute of Electrical Engineers of Japan C, [38]

Transaction of the Institute of Electronics, Information and Communication Engineers D-I (Japan), [387, 334]

Transactions of the Institute of Electrical Engineers of Japan C, [160]

Transactions of the Institute of Electrical Engineers of Japan D, [301]

Transactions of the Institute of Electronics, Information, and Communication Engineers D-I, [228]

Transactions of the Institute of Electronics, Information, and Communication Engineers D-II (Japan), [80]

Transactions of the Institute of System, Control, and Information Engineers (Japan), [300]

Transactions of the Society of Instrument and Control Engineers (Japan), [366]

Wall Street Journal, [504]

Wuhan Univ. J. Nat. Sci. (China), [439, 656]

total 228 articles in 146 series

4.3 Theses

The following two lists contain theses, first PhD theses and then Master's etc. theses, arranged in alphabetical order by the name of the school.

4.3.1 PhD theses

Colorado State University, [128]

Illinois Institute of Technology, [371]

Louisiana State University of Agricultural and Mechanical College, [320]

North Dakota State University of Agriculture and Applied Sciences, [246, 559, 612]

Syracuse University, [162]

Tampere University of Technology, [465]

The Ohio State University, [554]

The Pennsylvania State University, [618]

University of California, [363]

University of Illinois at Chicago, [619]

University of Missouri - Rolla, [243]

University of New Hamshire, [99]

University of New Mexico, [290]

University of Stirling, [123]

total 16 thesis in 14 schools

4.3.2 Master's theses

This list includes also "Diplomarbeit", "Tech. Lic. Theses", etc.

Air Force Institute of Technology, [530]

Concordia University, [255]

Helsinki University of Technology, [374]

Tampere University of Technology, [378]

University of Helsinki, [297]

University of Nebraska-Lincoln, [380]

University of North Carolina at Charlotte, [352]

University of Tampere, [460]

University of Tulsa, [568]

Universität Würzburg, [359]

Vanderbilt University, [591]

Victoria University of Wellington, [124]

Vienna University of Economics and Business Admimistration, [440]

total 13 thesis in 13 schools

4.4 Report series

The following list contains references to all papers published as technical reports. The list is arranged in alphabetical order by the name of the institute.

Akademie der Wissenschaft der DDR, [515]

Australian Defence Force Academy, [287]

Carnegie-Mellon University, [186]

Catholic University Nijmegen, [570]

Edinburgh Parallel Computing Centre, [606, 607]

Friedrich-Alexander-Universität Erlangen-Nürnberg, [600]

Indian Institute of Technology, [786]

International Computer Science Institute (ICSI), [321]

Kernforschungsanlage Jülich, [595, 596]

Leiden University, [187]

Michigan State University, [361, 436]

Naval Research Laboratory, [185]

Naval Research Laboratory AI Center, [266]

Navy Research Laboratory, [684]

Physical Optics Corporation, [358]

Plymouth Engineering Design Centre, [244]

Politecnico di Milano, [526]

Rensselaer Polytechnic Institute, [592]

Ruhr-Universität Bochum, [643]

Sandia National Laboratories, [584, 586]

Stanford University, [428]

Tennessee University, [778]

The University of Rochester, [518]

Tulane University, [433, 252]

Universidad de Granada, [48]

University of Alabama, [759, 247, 543, 545, 782, 784]

University of California, [549]

University of Cambridge, [110]

University of Dortmund, [190, 512, 553]

University of Edinburgh, [383]

University of Granada, [188, 193]

University of Illinois at Urbana-Champaign, [119, 325, 544]

University of Michigan, [588]

University of Nebraska-Lincoln, [490, 497]

University of San Diego, [113]

University of Tampere, [437, 471]

University of Vaasa, [137, 339, 340, 341, 342]

Universität Hildesheim, [729]

Universität Karlsruhe, [355]

Universität Osnabrück, [564]

Universität Würzburg, [399]

Université McGill, [635]

Vanderbilt University, [548, 590]

total 65 reports in 43 institutes

4.5 Patents

The following list contains the names of the patents of genetic algorithm implementations. The list is arranged in alphabetical order by the name of the patent.

- none

4.6 Authors

The following list contains all genetic algorithm implementations authors and references to their known contributions.

Aarts, E. H. L., [111]

Abe, Tamotsu, [744]

Abkevich, Victor I., [229]

Abramson, David, [508]

Adeli, H., [365]

Adeli, Hojjat, [417]

Aggarwal, Charu C., [212]

Aguado-Bayon, L. Enrique, [27]

Ahuja, Sanjay P., [622]

Ait-Boudaoud, D., [389]

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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, BackBib = Thomas Bäck's unpublished bibliography, Fogel/Bib = David Fogel's EA bibliography, etc
* = only abstract seen.
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The last field in each reference item in `Teletype` font is the BiBTEXkey of the corresponding reference.

Appendix A

Abbreviations

The following other abbreviations were used to compress the titles of articles in the permutation title index:

AI	= Artificial Intelligence
Alg.	= Algorithm(s)
AL	= Artificial Life
ANN(s)	= Artificial Neural Net(work)(s)
Appl.	= Application(s), Applied
Appr.	= Approach(es)
Cntr.	= Control, Controlled,
	= Controlling, Controller(s)
Coll.	= Colloquium
Comb.	= Combinatorial
Conf.	= Conference
CS(s)	= Classifier System(s)
Distr.	= Distributed
Eng.	= Engineering
EP	= Evolutionary Programming
ES	= Evolutionsstrategie(n),
	= Evolution(ary) strategies
Evol.	= Evolution, Evolutionary
ExS(s)	= Expert System(s)
FF(s)	= Fitness Function(s)
GA(s)	= Genetic Algorithm(s)
Gen.	= Genetic(s), Genetical(ly)
GP	= Genetic Programming
Ident.	= Identification
Impl.	= Implementation(s)
Int.	= International
ImPr	= Image Processing
JSS	= Job Shop Scheduling
ML	= Machine Learning
Nat.	= Natural
NN(s)	= Neural Net(work)(s)
Opt.	= Optimization, Optimal,
	= Optimizer(s), Optimierung
OR	= Operation(s) Research
Par.	= Parallel, Parallelism
Perf.	= Performance
Pop.	= Population(s), Populational(ly)
Proc.	= Proceedings
Prog.	= Programming, Program(s), Programmed
Prob.	= Problem(s)
QAP	= Quadratic Assignment Problem
Rep.	= Representation(s), Representational(ly)
SA	= Simulated Annealing
Sch.	= Scheduling, Schedule(s)
Sel.	= Selection, Selectionism
Symp.	= Symposium
Syst.	= System(s)
Tech.	= Technical, Technology
TSP	= Travel(l)ing Salesman Problem

Appendix B

Bibliography entry formats

footnotesize This documentation was prepared with LaTeX and reproduced from camera-ready copy supplied by the editor. The ones who are familiar with BibTeX 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 BibTeX 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. †.

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.