An Indexed Bibliography of Genetic Algorithms in Robotics

compiled by

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dedicated to Toshio Fukuda

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

Trademarks

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 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 contained 10684 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

- ACM: *ACM Guide to Computing Literature:* 1979 – 1993/4
- BA: *Biological Abstracts:* July 1996 - Nov. 1997
- ChA: *Chemical Abstracts:* Jan. 1997 - Aug. 1998
- CA: *Computer Abstracts:* Jan. 1993 – Feb. 1995
- CCA: *Computer & Control Abstracts:* Jan. 1992 – Apr. 1998 (except May -95)
- 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. 1997
- P: *Index to Scientific & Technical Proceedings:* Jan. 1986 – Dec. 1997 (except Nov. 1994)
- A: *International Aerospace Abstracts:* Jan. 1995 – Mar. 1998
- N: *Scientific and Technical Aerospace Reports:* Jan. 1993 - Dec. 1995 (except Oct. 1995)
- EI A: *The Engineering Index Annual:* 1987 – 1992
- EI M: *The Engineering Index Monthly:* Jan. 1993 – Apr. 1998 (except May 1997)

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 algorithms in robotics 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{gaROBOTbib,
     KEY = "ROBOT",
     ANNOTE = "*on,*FIN,bibliography /special",
     AUTHOR = "Jarmo T. Alander",
     TITLE = "Indexed Bibliography of Genetic Algorithms in Robotics",
     INSTITUTION = "University of Vaasa, Department of Information Technology and Production Economics",
     TYPE = "Report",
     NUMBER = "94-1-ROBOT",
     NOTE = "(\ftp{ftp.uwasa.fi}{cs/report94-1}{gaROBOTbib.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	gaROBOTbib.ps.Z
www	Finland	http://www.cs.hut.fi	~ja/gaROBOTbib	gaROBOTbib.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.

1.3 Acknowledgement

The editor wants to acknowledge all who have kindly supplied references, papers and other information on genetic algorithms in robotics 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, 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. 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

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
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
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.

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*
`robot`	`ANNOTE`	Robotics
`robot`	`TITLE`	Robotics
`Robot`	`TITLE`	Robotics

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

Chapter 3

Statistical summaries

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

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

- **Robotics** 433 references ([10]-[442])

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	1
part of a collection	12
journal article	71
proceedings article	315
report	23
PhD thesis	8
MSc thesis	3
total	433

Table 3.1: Distribution of publication type.

3.2 Annual distribution

Table 3.2 gives the number of genetic algorithms in robotics 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*
1988	2	1989	4
1990	13	1991	14
1992	42	1993	56
1994	72	1995	90
1996	93	1997	43
1998	4		
total			433

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.

robotics	290
control	71
neural networks	40
genetic programming	36
robots	27
mobile robots	24
machine learning	21
robot	16
path planning	15
scheduling	14
fuzzy systems	14
planning	12
image processing	12
motion planning	10
classifier systems	10
others	852

Table 3.3: The most popular subjects.

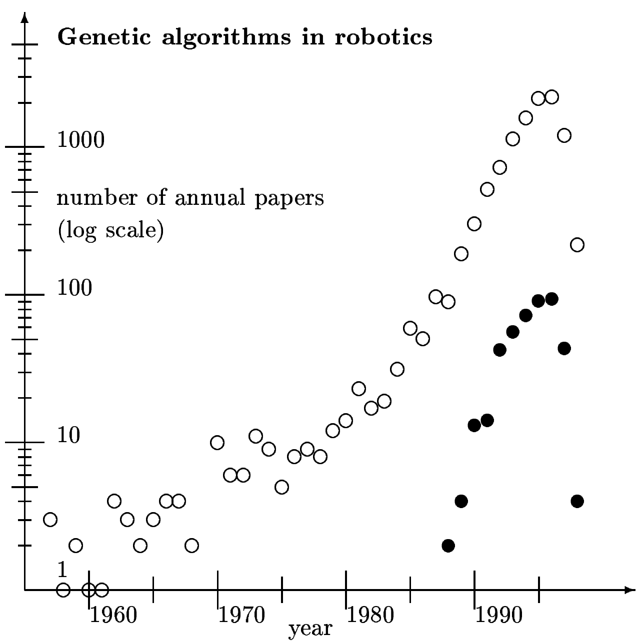

Figure 3.1: The number of papers applying **genetic algorithms in robotics** (•) ∘ = total GA papers. Observe that the last two years are most incomplete in the database.

3.4 Authors

Table 3.4 gives the most productive authors.

total number of authors	559
Fukuda, Toshio	38
Harvey, Inman	22
Shibata, Takanori	21
Husbands, Philip	20
Cliff, David T.	19
Dorigo, Marco	12
Ahuactzin, Juan-Manuel	11
Bessière, Pierre	11
Zalzala, A. M. S.	11
Mazer, Emmanuel	10
Talbi, El-Ghazali	10
2 authors	9
4 authors	8
4 authors	7
6 authors	6
7 authors	5
9 authors	4
27 authors	3
63 authors	2
425 authors	1

Table 3.4: The most productive genetic algorithms in robotics 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 main database are classified by country.

country	*abs*	*%*
Total	433	100.00
Japan	106	24.48
United States	77	17.78
United Kingdom	57	13.16
France	30	6.93
Unknown country	16	3.70
Germany (incl. DDR)	14	3.23
Italy	14	3.23
China (incl. Hong Kong)	12	2.77
Finland	12	2.77
Israel	10	2.31
South Korea	9	2.08
Taiwan R.o.C.	8	1.85
Belgium	7	1.62
Australia	6	1.39
Poland	5	1.15
Sweden	5	1.15
Canada	4	0.92
Denmark	4	0.92
Greece	4	0.92
Switzerland	4	0.92
Czech Republic	3	0.69
Singapore	3	0.69
Yugoslavia	3	0.69
Austria	2	0.46
Mexico	2	0.46
Spain	2	0.46
Turkey	2	0.46
Bulgaria	1	0.23
India	1	0.23
Romania	1	0.23
Slovenia	1	0.23
Thailand	1	0.23

Table 3.5: The geographical distribution of the authors.

3.6 Conclusions and future

The editor believes that this bibliography contains references to most genetic algorithms in robotics 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.

Genetic Algorithms and Robotics: A heuristic strategy for optimization, [338]

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.

Adaptive Behavior, [86, 237]

Advanced Technology for Developers, [414]

Artif. Intell. Eng. (UK), [218, 233]

Artificial Intelligence, [119]

Artificial Life, [83, 147, 197]

BioSystems, [351]

Comput. Ind. Eng. (UK), [229]

Control Engineering Practice, [90]

IEE Colloq. Dig., [262]

IEE Conf. Publ. ETSI konferenssi, [265]

IEEE Transactions on Evolutionary Computation, [301]

IEEE Transactions on Industrial Electronics, [244]

IEEE Transactions on Systems, Man, and Cybernetics, [258, 264, 270, 278, 324, 325, 348]

IEICE Transactions, [435]

IEICE Transactions on Information and Systems, [408]

Information Sciences, [311]

International Journal of Vehicle Design, [290]

J. Intell. Robot. Syst., Theory Appl. (Netherlands), [246]

J. Jpn. Soc. Precision Eng. (Japan), [308]

J. Robot. Syst. (USA), [99, 259, 296, 303, 304]

Journal of Computing in CivilEngineering, [309]

Journal of Guidance, Control, and Dynamics, [168]

Journal of Korean Institute of Telematics and Electronics, [96]

Journal of Robotics Society of Japan, [196]

JSME Int. J. C, Dyn. Control Robot. Des. Manuf. (Japan), [173]

Kikai Gijutsu Kenkyusho Shoho, [425]

Konstruktion, [260]

Machine Learning, [167]

Mech. Mach. Theory, [235]

Mechatronics, [280]

Nippon Kikai Gakkai Ronbunshu C Hen, [155, 175, 220, 234, 367, 393]

Robotersysteme, [399]

Robotica, [132, 307, 323]

Robotica (UK), [245]

Robotics and Autonomous Systems, [124, 139, 144, 169, 216, 231, 247, 274, 279]

Telematics and Informatics, [74]

Teleoperators and virtual environments, [255]

Trans. Inst. Electr. Eng. Jpn. C (Japan), [291]

Trans. Inst. Syst. Control Inf. Eng. (Japan), [298, 319]

Transactions of the Society of Instrument and Control Engineers (Japan), [84, 113]

total 71 articles in 40 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

Carnegie Mellon University, [87]

Ecole Normale Superieure de Lyon, [106]

Imperial College for Science, [335]

Institut Imag, [63]

Oxford University, [145]

Universidad Politécnica de Madrid, [82]

University of Alabama, [394]

University of Dordmund, [322]

total 8 thesis in 8 schools

4.3.2 Master's theses

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

Conservatoire National des Artes et Metiers Centre Regional Associe de Grenoble, [332]

Monash University, [211]

Naval Postgraduate School, [369]

total 3 thesis in 3 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.

Aarhus University, [64]

Army Strategic Defense Command, [350]

International Computer Science Institute (ICSI), [346]

National Research Counsil (C. N. R.), [150, 184, 236]

Politecnico di Milano, [344, 42]

Swiss Federal Institute of Technology at Lausanne, [134]

University of Dortmund, [198, 202]

University of North Carolina at Charlotte, [406]

University of Sussex, [75, 441, 376, 377, 378, 379, 380, 383, 391]

University of Vaasa, [55]

Université Libre de Bruxelles, [105]

total 23 reports in 11 institutes

4.5 Patents

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

- none

4.6 Authors

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

total 433 articles by 559 different authors

4.7 Subject index

All subject keywords of the papers given by the editor of this bibliography are shown next.

4.8 Annual index

The following table gives references to the contributions by the year of publishing.

4.9 Geographical index

The following table gives references to the contributions by country.

- Australia: [12, 136, 149, 158, 211, 30]
- Austria: [127, 38]
- Belgium: [432, 43, 44, 105, 119, 266, 278]
- Bulgaria: [251]
- Canada: [72, 95, 189, 259]
- China (incl. Hong Kong): [116, 153, 218, 229, 233, 245, 274, 325, 400, 78, 108, 256]
- Czech Republic: [24, 225, 271]
- Denmark: [64, 147, 178, 197]
- Finland: [433, 56, 57, 58, 59, 60, 137, 161, 192, 55, 310, 10]
- France: [409, 426, 427, 329, 53, 416, 417, 418, 428, 429, 332, 419, 420, 421, 422, 423, 424, 63, 70, 106, 144, 146, 160, 169, 177, 185, 213, 232, 35]
- Germany (incl. DDR): [370, 399, 102, 434, 188, 198, 202, 237, 238, 260, 33, 287, 439, 322]
- Greece: [118, 208, 235, 307]
- India: [14]
- Israel: [334, 335, 336, 337, 338, 339, 340, 341, 342, 309]
- Italy: [344, 345, 346, 347, 42, 348, 83, 110, 150, 167, 184, 236, 293]
- Japan: [48, 49, 352, 440, 353, 354, 355, 356, 357, 407, 50, 51, 358, 46, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 392, 393, 408, 425, 65, 69, 76, 77, 84, 89, 90, 92, 94, 97, 109, 113, 115, 117, 120, 131, 141, 148, 152, 435, 155, 156, 436, 159, 166, 21, 171, 173, 175, 180, 182, 183, 22, 187, 191, 193, 194, 195, 196, 200, 206, 28, 215, 219, 220, 222, 223, 227, 228, 31, 234, 243, 247, 250, 253, 267, 36, 275, 276, 438, 279, 281, 283, 284, 291, 294, 295, 297, 298, 299, 308, 311, 312, 315, 316, 318, 319, 321]
- Mexico: [415, 91]
- Poland: [15, 104, 19, 29, 313]
- Romania: [142]
- Singapore: [170, 25, 244]
- Slovenia: [133]
- South Korea: [430, 96, 157, 163, 248, 268, 272, 300, 314]
- Spain: [82, 164]
- Sweden: [204, 241]
- Switzerland: [124, 134, 181, 306]
- Taiwan R.o.C.: [172, 209, 214, 226, 246, 252, 269, 39]
- Thailand: [26]
- Turkey: [126, 37]
- United Kingdom: [441, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 442, 390, 391, 52, 412, 431, 62, 66, 75, 80, 98, 103, 107, 111, 114, 122, 125, 129, 130, 132, 139, 140, 145, 154, 176, 186, 199, 201, 203, 212, 221, 230, 240, 249, 262, 277, 280, 282, 302, 304, 320]
- United States: [394, 410, 41, 349, 350, 402, 331, 45, 47, 411, 54, 369, 396, 397, 398, 403, 404, 405, 414, 333, 351, 371, 375, 406, 413, 61, 67, 11, 73, 74, 79, 81, 85, 86, 13, 87, 93, 99, 100, 101, 16, 18, 112, 121, 123, 20, 138, 143, 162, 165, 174, 190, 205, 207, 27, 216, 231, 239, 254, 255, 257, 258, 437, 261, 263, 34, 270, 273, 288, 290, 296, 301, 303, 305, 317, 323]
- Unknown country: [32, 264, 265, 285, 286, 289, 292]
- Yugoslavia: [135, 179, 324]

Chapter 5

Permuted title index

The words of the titles of the articles are shown in the next table arranged in alphabetical order. The most common words have been excluded. The key word is shown by a disk (•) in the title field with the exception that it is omitted when appearing as the first word of the title after shown keyword. The other abbreviation used to compress titles are shown in appendix A.

[337] **reward** Lamarckian sub-goal • in GA
[103] **Robo sapiens** a personal assistant robot
[205] **RoboShepherd** Learning a complex behavior

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[1] John H. Holland. Genetic algorithms. *Scientific American*, 267(1):44–50, 1992. ga:Holland92a.

[2] Jarmo T. Alander. *An indexed bibliography of genetic algorithms: Years 1957-1993.* Art of CAD Ltd., Vaasa (Finland), 1994. (over 3000 GA references).

[3] David E. Goldberg, Kelsey Milman, and Christina Tidd. Genetic algorithms: A bibliography. IlliGAL Report 92008, University of Illinois at Urbana-Champaign, 1992. ga:Goldberg92f.

[4] N. Saravanan and David B. Fogel. A bibliography of evolutionary computation & applications. Technical Report FAU-ME-93-100, Florida Atlantic University, Department of Mechanical Engineering, 1993. (available via anonymous ftp site magenta.me.fau.edu directory /pub/ep-list/bib file EC-ref.ps.Z) ga:Fogel93c.

[5] Thomas Bäck. Genetic algorithms, evolutionary programming, and evolutionary strategies bibliographic database entries. (personal communication) ga:Back93bib, 1993.

[6] 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. ga:Schwefel92d.

[7] Leslie Lamport. *LaTeX: A Document Preparation System. User's Guide and Reference manual.* Addison-Wesley Publishing Company, Reading, MA, 2 edition, 1994.

[8] Alfred V. Aho, Brian W. Kernighan, and Peter J. Weinberger. *The AWK Programming Language.* Addison-Wesley Publishing Company, Reading, MA, 1988.

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[12] M. Mohammadian and Russel James Stonier. Tuning and optimisation of membership functions of fuzzy logic controllers by genetic algorithms. In *Proceedings of the 3rd IEEE International Workshop on Robot and Human Communication*, pages 356–361, Nagoya, 18.-20. July 1994. IEEE, Piscataway, NJ. †(EI M038935/95) ga94aMohammadian.

[13] B. Ravichandran and A. C. Sanderson. Model-based matching using a hybrid genetic algorithm. In *Proceedings of the 1994 IEEE International Conference on Robotics and Automation*, volume 3, pages 2064–2069, San Diego, CA, 8.-13. May 1994. IEEE Computer Society Press, Los Alamitos, CA. ga94aRavichandran.

[14] Mukesh Taneja and N. Viswanadham. Inspection allocation in manufacturing systems: A genetic algorithm approach. In *Proceedings of the 1994 IEEE International Conference on Robotics and Automation*, volume 4, pages 3537–3542, San Diego, CA, 8.-13. May 1994. IEEE Computer Society Press, Los Alamitos, CA. ga94aTaneja.

[15] K. Wala and H. Gadek-Madeja. Genetic algorithm for the multilevel generalized assignment problem. In *Proceedings of the First International Symposium on Mathematical Models in Automation and Robotics*, pages 137–141, Miedzyzdroje, Poland, 1.-3. September 1994. Wadywnictwo Uczelniane Politech. Szczecinskiej, Szczecin, Poland. †(CCA54314/97) ga94aWala.

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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.
? = 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

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.