Appendix 1

An Indexed Bibliography of Genetic Algorithms

(Books, Proceedings, Journal Articles, and Ph.D. Thesis)

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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 y (or *), which are the ones that the editor has unfortunately not had the opportunity to read.

Contents

1. Preface

The material of this bibliography has been extracted by taking books, proceedings, journal articles, Ph.D. theses, and patents from the indexed genetic algorithm bibliography [10], which currently contains over 3000 items and which has been collected from several sources of genetic algorithm literature including Usenet newsgroup comp.ai.genetic and the bibliographies [308, 740, 47, 48]. The following index periodicals have been used systematically

- ACM: *ACM Guide to Computing Literature*: 1979 - 1993/4
- CCA: *Computer & Control Abstracts*: Jan. 1992 - Sep. 1994
- CTI: *Current Technology Index* Jan./Feb. 1993 - Jan./Feb. 1994
- DAI: *Dissertation Abstracts International*: Vol. 53 No. 1 - Vol. 54 No. 12 (1994)
- EEA: *Electrical & Electronics Abstracts*: Jan. 1991 - Aug. 1994
- P: *Index to Scientific & Technical Proceedings*: Jan. 1986 - Sept. 1994
- EI A: *The Engineering Index Annual*: 1987 - 1992
- EI M: *The Engineering Index Monthly*: Jan. 1993 - Sept. 1993

The following GA researchers, cited in this bibliography, have already kindly supplied their complete autobibliographies and/or proofread references to their papers: Patrick Argos, James E. Baker, Wolfgang Banzhaf, I. L. Bukatova, ThomasacBk, Yuval Davidor, Marco Dorigo, Bogdan Filipic, Terence C. Fogarty, David B. Fogel, Toshio Fukuda, Hugo de Garis, Robert C. Glen, David E. Goldberg, Martina Gorges-Schleuter, Jeffrey Horn, Aristides T. Hatjimihail, Richard S. Judson, Akihiko Konagaya, John R. Koza, Kristinn Kristinsson, Carlos B. Lucasius, J. J. Merelo, Zbigniew Michalewicz, Melanie Mitchell, Volker Nissen, Nicholas J. Radcliffe, Colin R. Reeves, Hans-Paul Schwefel, Michael T. Semertzidis, William M. Spears, El-Ghazali Talbi, Peter M. Todd, Hans-Michael Voigt, Roger L. Wainwright, Steward W. Wilson, Xin Yao, and Xiaodong Yin.

This bibliography is updated on a regular basis and certainly contains many errors and inconsistences. The editor of this bibliography 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 research community and others who are interested in this rapidly growing area of genetic algorithms.

1.1 Acknowledgement

2 Statistical summaries

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

2.1. Publication type

This bibliography contains published contributions including reports and patents. All unpublished manuscripts have been omitted unless accepted for publication. In addition theses, Ph.D., MSc etc., are also included whether or not published somewhere. Table 2.1 gives the distribution of publication type of the whole bibliography.

type	number of items
book	43
journal article	742
proceedings	40
Ph.D. thesis	118
others	14
total	957

Table 2.1: Distribution of publication type.

2.2 Annual distribution

Table 2.2 gives the number of genetic algorithms papers published annually. The annual distribution is also shown in Figure 2.1. The average annual growth of GA papers has been approximately 40% during almost the last twenty years.

2.3 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 2.3.

year	items	year	items	year	items
1957	3	1958	0	1959	0
1960	0	1961	0	1962	3
1963	2	1964	0	1965	0
1966	3	1967	4	1968	0
1969	0	1970	6	1971	4
1972	3	1973	8	1974	3
1975	4	1976	3	1977	6
1978	3	1979	6	1980	8
1981	15	1982	8	1983	5
1984	13	1985	16	1986	21
1987	25	1988	27	1989	39
1990	77	1991	101	1992	199
1993	294	1994	48		
total	957				

Table 2.2: Annual distribution of contributions.

Evolution strategies	90
Neural networks	61
Optimization	57
Review	37
CAD	32
Scheduling	25
Machine learning	22
TSP	22
Parallel GA	21
Chemistry	21
Evolution	19
Genetic programming	18
Classifier systems	17
Engineering	16
Protein folding	15
Artificial life	15
Patent	14
Layout design	14
Engineering/mechanical	14
Control	14
Simulation	13
Image processing	13
Comparison/simulated annealing	13
Analyzing GA	12
Learning	11
Engineering/construction	11
Implementation/C	10
Others	1621

Table 2.3: The most popular subjects.

Total number of authors	1094
Goldberg, David E.	29
Fogel, David B.	14
Holland, John H.	13
Kateman, Gerrit	13
Koza, John R.	13
Lucasius, Carlos B.	12
Anon.	9
Liepins, Gunar E.	9
Whitley, Darrell	9
Forrest, Stephanie	8
De Jong, Kenneth A.	8
Michalewicz, Zbigniew	8
Vose, Michael D.	8
Bukatova, Innesa L.	7
Deb, Kalyanmoy	7
Grefenstette, John J.	7
Rice, James P.	7
Schwefel, Hans-Paul	7
Banzhaf, Wolfgang	6
Davis, Lawrence	6
Dorigo, Marco	6
Ebeling, Werner	6
Judson, Richard S.	6
Buydens, L. M. C.	5
Karr, Charles L.	5
Kitano, Hiroaki	5
Klimasauskas, Casimir C.	5
Muhlenbein, Heinz	5
Preis, K.	5
18 authors	4
51 authors	3
129 authors	2
866 authors	1

Table 2.4: The most productive genetic algorithms authors.

2.4 Conclusions and future

The author believes that this bibliography contains references to most genetic algorithms contributions up to and including the year 1994 and he 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.

3. Indexes

3.1 Books

The following list contains all items classified as books.

A Connectionist Machine for Genetic Hillclimbing, [6]

Adaptation in Natural and Artificial Systems, [373, 376]

Adventures in Artificial Life, [857]

Artificial Life Explorer's Kit, [816]

Artificial Life at Stanford, [496]

Artificial Life: The Quest for new Creation, [535]

Artificial Intelligence Through Simulated Evolution, [239]

Complex Systems: from Biology to Computation, [321]

Computational Intelligence Imitating Life, [924]

Det Levende Spil Biologisk Form og Kunstigt liv, [211]

Dynamic, Genetic, and Chaotic Programming, [787]

Evoinformatics: Theory and Practice of Evolutionary Simulation, [126]

Evolution and Optimization: An Introduction to Solving Complex Problems by Replicator Networks, [844]

Evolution of Information Processing Systems, An Interdisciplinary Approach to a New Understanding of Nature and Society, [342]

Evolution, Games, and Learning, [216]

Evolutionary Art and Computers, [821]

Evolutionary Modelling Simulation and Its Applications, [121]

Evolutionary Simulation: Ideas, Theoretical Fundamentals, Applications, [122]

Evolutionsstrategie: Optimierung technisher Systeme nach Prinzipien der Biologischen Evolution, [702]

Evolutionare Algorithmen, Darstellung, Beispiele, betriebswirtschaftliche Anwendungmoglichkeiten, [630]

Genetic Algorithms, [120]

Genetic Algorithms + Data Structures = Evolution Programs, [590]

Genetic Algorithms and Robotics: A Heuristic Strategy for Optimization, [163]

Genetic Algorithms at Stanford, [497]

Genetic Algorithms in Search, Optimization, and Machine Learning, [290]

Genetic Algorithm, [474]

Genetic Programming: On Programming Computers by Means of Natural Selection and Genetics, [494]

Handbook of Genetic Algorithms, [168]

Induction: Processes of Inference, Learning, and Discovery, [381]

Introduction to Genetic Algorithms, [29]

Modern Heuristic Techniques for Combinatorial Problems, [707]

Neural Networks and Genetic Algorithms — Business Applications and Case Studies, [276]

Nonlinear Process Control: Applications of Genetic Model Control, [529]

Numerical Optimization of Computer Models, [758]

Numerische Optimierung von Computer-Modellen mittels der Evolutionsstrategie, [757]

Parallel Genetic Algorithms, [794]

Parallelism and Programming in Classifier Systems, [246]

Parallel Processing in Neural Systems and Computers, [206]

System Indentification Through Simulated Evolution: A Machine Learning Approach to Modeling, [226]

The Ecology of Computation, [393]

The Evolution of Cooperation, [40]

Theory of self-reproducing automata, [849]

total 42 books

3.2 Theses

The following list contains Ph.D. theses arranged in alphabetical order by the name of the school.

Academy of Sciences, [843]

Carnegie-Mellon University, [7]

Colorado State University, [71, 578, 792]

Georgia Institute of Technology, [132]

Gesamthochschule Wupperthal, [357]

HAB Weimar, [84]

Humboldt-Universitat zu Berlin, [98]

Imperial College for Science, [162]

Indiana University, [553]

Louisiana State University of Agricultural and Mechanical College, [90]

Michigan State University, [739]

Mississippi State University, [106]

New Mexico State University, [22, 401]

New York University, [871]

North Dakota State University of Agriculture and Applied Sciences, [909, 444, 815]

Oregon Graduate Institute of Science and Technology, [731]

Politechnico di Milano, [193]

Polytechnic University, [139]

Purdue University, [423]

Rensselaer Polytechnic Institute, [42, 677, 698]

Ruhruniversitat Bochum, [366]

Stanford University, [726, 818]

Technische Universitat der Berlin, [79, 869, 345, 370, 614, 551, 332, 700, 713, 744, 756]

The Ohio State University, [19, 526, 396]

The Pennsylvania State University, [319, 538]

The University of Connecticut, [681]

The University of Oklahoma, [549]

The University of Utah, [400]

The University of Wisconsin-Madison, [912]

Tulane University, [20]

University of Alabama, [181, 451, 463, 781, 834]

University of Alberta, [113, 773]

University of Bonn, [73, 848]

University of California, [150]

University of California at San Diego, [227]

University of Cambridge, [577]

University of Cincinnati, [826]

University of Dortmund, [348, 314]

University of Edinburgh, [688]

University of Florida, [547, 174]

University of Heidelberg, [3, 176]

University of Helsinki, [735]

University of Houston, [667]

University of Illinois at Chicago, [921]

University of Iowa, [281]

University of Michigan, [50, 83, 94, 136, 432, 243, 254, 279, 283, 311, 333, 382, 5, 654, 670, 715, 728, 812, 870]

University of Minnesota, [209]

University of Missouri-Rolla, [207, 210, 696]

University of North Carolina at Chapel Hill, [416]

University of North Carolina at Charlotte, [767]

University of Paris, [765]

University of Pittsburgh, [727, 785]

University of Pretoria, [191]

University of Reading, [53]

University of Stirling, [346]

University of Tennessee, [336]

University of Washington, [135, 905]

Universitat-Gesamthochschule Essen, [523]

Vanderbilt University, [51, 661, 741]

Virginia Polytechnic Institute and State University, [155]

l'Institut National Polytechnique de Grenoble, [806]

total 118 thesis in 62 schools

3.3 Patents

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

A non-linear genetic algorithm for solving problems, [493, 495]

A non-linear genetic process for data encoding and for solving problems using automatically defined functions, [501]

A non-linear genetic process for problem solving using spontaneously emergent self-replicating and self-improving entities, [503]

Adaptive computing system capable of learning and discovery, [379]

Machine learning procedures for generating image domain feature detectors, [280]

Method and apparatus for training a neural network using evolutionary programming, [237]

Method of controlling a classifier system, [380]

Non-linear genetic algorithms for solving problems, [491]

Non-linear genetic algorithms for solving problems by finding a fit composition of functions, [492]

Non-linear genetic process for data encoding and for solving problems using automatically defined functions, [502]

Non-linear genetic process for problem solving using spontaneously emergent self-replicating and self-improving entities, [504]

Non-linear genetic process for use with co-evolving populations, [499]

Non-linear genetic process for use with plural co-evolving populations, [500]

total 13 patents

3.4 Subject index

All subject keywords of the papers given by the editor of this bibliography are shown next. The keywords neural networks", \optimization", and \evolution strategies" have been omitted in this list because of their high occurrence rate.

2D-GA,   [16]
acoustics,   [532, 228, 585]
adaptation,   [50, 433, 94, 587, 376]
aerospace,   [386]
AI,   [239, 219, 282, 227, 889, 19, 352]
ALECSYS,   [195]
alloys,   [784]
analysis,   [254, 124, 437, 35, 915]
analysis
  Markov chains,   [631, 35, 45, 566]
  Walsh fuctions,   [295]
analysis of variance,   [537]
analyzing GA,   [51, 20, 300, 302, 661, 22, 689, 174, 851, 545, 631, 2]

analyzing GA
  deception,   [295]
  factor analysis,   [338]
Animat problem,   [893, 587]
application,   [222, 451, 87, 769]
application
  computer graphics, [778]
  finance,   [223]
  geotechnics,   [776]
  mechanics,   [129]
  medical imaging,   [367]
  NMR devices,   [678, 317]
  VLSI,   [770, 141]
applications
  business,   [276]
  forestry,   [419]
  manufacturing,   [921]
artificial life,   [739, 519, 190, 429, 75, 837, 211, 793, 520, 535, 150]

artificial life
  Stanford,   [496]
assembly planning,   [533]
assortment problem,   [277]
automata,   [849]
autonomous agents,   [808]
basics,   [290]
BEAGLE,   [250]
bibliography
  70 items,   [320]
  neural networks,   [916]

3.5 Annual index: 1957-1990

The following table gives references to the contributions published during the period 1957-1990.

1957 [256, 61, 107]
1962 [255, 62, 371]
1963 [109, 200]
1966 [239, 849, 721]
1967 [50, 110, 705, 728]
1970 [111, 136, 632, 729, 730, 870]
1971 [382, 633, 634, 700]
1972 [254, 311, 670]
1973 [598, 128, 372, 575, 648, 649, 701, 702]
1974 [348, 657, 875]
1975 [432, 373, 418, 756]
1976 [370, 725, 754]
1977 [15, 119, 349, 446, 483, 757]
1978 [98, 415, 366]
1979 [3, 121, 197, 331, 447, 332]
1980 [55, 83, 433, 847, 374, 655, 703, 785]
1981 [39, 91, 113, 122, 250, 345, 445, 523, 673, 684, 685]
1982 [94, 270, 618, 667, 637, 749, 786, 891]
1983 [283, 267, 359, 669, 668]
1984 [40, 79, 123, 152, 613, 704, 583, 654, 713, 741, 759]
1985 [99, 108, 718, 189, 243, 251, 323, 280, 279, 333, 379]
1986 [147, 719, 203, 204, 217, 216, 219, 264, 281, 324, 8, 708, 830, 635, 876, 897, 922]
1987 [4, 6, 7, 78, 103, 104, 335, 124, 148, 166, 198, 325, 468, 608, 662, 859, 893, 843, 871, 261]
1988 [41, 73, 84, 95, 101, 102, 105, 434, 222, 224, 76, 312, 540, 609, 715, 723, 894, 739, 743, 856, 872, 878]
1989 [519, 600, 51, 56, 89, 96, 127, 350, 162, 190, 846, 289, 290, 306, 176, 380, 375, 394, 747, 451, 462, 463, 541, 588, 659, 845, 844, 854, 901]
1990 [17, 21, 20, 38, 37, 57, 74, 85, 87, 88, 890, 163, 167, 435, 238, 244, 275, 300, 302, 291, 293, 314, 316, 329, 823, 178, 612, 344, 444, 471, 485, 491, 492, 499, 500, 257, 848, 543, 555, 679, 570, 589, 672, 677, 683, 429, 430, 688, 692, 911, 722, 571, 760, 769, 825, 544, 680, 175]

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