

An Indexed Bibliography of Genetic Algorithms, the Traveling Salesman Problem, Logistics, and Transportation

compiled by

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Dedicated to the tired salesmen

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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 '†' (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 (May 6, 2014) contained 22162 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
- 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 TSP 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 BiB_TE_X 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_AT_EX/Bib_TE_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>
<code>web</code>	Finland	<code>lipas.uwasa.fi</code>	<code>~TAU/reports/report94-1</code>	<code>gaTSPbib.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 TSP 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 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, 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 Michalewics, 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,

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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>
TSP	ANNOTE	Traveling Salesman Problem (TSP)

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 TSP literature. More detailed indexes can be found in the next chapter.

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

- **Traveling Salesman Problem (TSP)** 212 references ([11]-[222])

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.

3.2 Annual distribution

Table 3.2 gives the number of genetic algorithms in TSP 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.

<i>type</i>	<i>number of items</i>
book	1
section of a book	1
part of a collection	8
journal article	72
proceedings article	101
report	12
PhD thesis	15
MSc thesis	2
<i>total</i>	212

Table 3.1: Distribution of publication type.

<i>year</i>	<i>items</i>	<i>year</i>	<i>items</i>
1966	1	1967	0
1968	0	1969	0
1970	0	1971	0
1972	0	1973	0
1974	0	1975	0
1976	0	1977	0
1978	0	1979	0
1980	0	1981	0
1982	0	1983	0
1984	0	1985	2
1986	0	1987	1
1988	3	1989	5
1990	8	1991	14
1992	11	1993	21
1994	16	1995	25
1996	17	1997	18
1998	16	1999	17
2000	9	2001	4
2002	8	2003	3
2004	1	2005	4
2006	2	2007	0
2008	1	2009	0
2010	2	2011	2
2012	1		
<i>total</i>			212

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.

<i>Total</i>	204
TSP	200
parallel GA	26
comparison	19
hybrid	15
crossover	15
implementation	14
analysing GA	13
optimization	10
others	492

Table 3.3: The most popular subjects.

3.4 Authors

Table 3.4 gives the most productive authors.

total number of authors	403
1 author	6
1 author	5
2 authors	4
14 authors	3
41 authors	2
344 authors	1

Table 3.4: The most productive genetic algorithms in TSP authors.

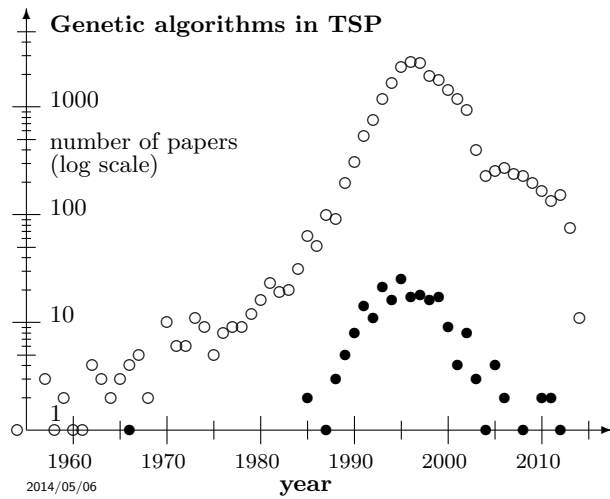


Figure 3.1: The number of papers applying **genetic algorithms in TSP** (\bullet , $N = 216$) and total GA papers (\circ , $N = 22162$). Observe that the last few years are most incomplete in the database.

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.

2014/05/06 <i>country</i>	<i>special</i>		<i>comparison</i>		<i>all</i>	
	<i>n</i>	%	δ [%]	Δ [%]	<i>N</i>	%
<i>Total</i>	199	100.00			20961	100.00
United States	68	34.17	+7.37	+28	5618	26.80
Germany	25	12.56	+5.90	+89	1395	6.66
Japan	21	10.55	-1.24	-11	2472	11.79
United Kingdom	12	6.03	-3.96	-40	2095	9.99
China	11	5.53	+0.28	+5	1100	5.25
Canada	7	3.52	+1.91	+119	337	1.61
Finland	6	3.02	-1.13	-27	870	4.15
South Korea	5	2.51	+0.30	+14	464	2.21
Taiwan	5	2.51	+0.27	+12	470	2.24
Spain	4	2.01	-0.06	-3	434	2.07
Belgium	3	1.51	+0.69	+84	171	0.82
France	3	1.51	-1.07	-41	541	2.58
Italy	3	1.51	-1.34	-47	598	2.85
Switzerland	3	1.51	+0.64	+74	183	0.87
The Czech Republic	3	1.51	+0.79	+110	151	0.72
The Netherlands	3	1.51	+0.52	+53	208	0.99
Australia	2	1.01	-1.43	-59	511	2.44
Brazil	2	1.01	-0.04	-4	221	1.05
Russia	2	1.01	+0.53	+110	101	0.48
Austria	1	0.50	-0.10	-17	126	0.60
<i>Others</i>	7	3.50	-1.01	-22	948	4.51

Table 3.5: The geographical distribution of the authors working on genetic algorithms in TSP (n) compared (δ and Δ) to all authors in the field of GAs (N). In the *comparison* column: $\delta\% = \%special - \%all$ and $\Delta = (1 - \frac{nN_{Total}}{Nn_{Total}}) \times 100\%$. Δ 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.

3.6 Conclusions and future

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

Näkökulmia laskennalliseen tieteeseen – Alkuräjähdyksestä kännykkään [Views to Computational Science – From Big Bang to Mobile Phones], [192]

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.

- Acta Electronica Sinica (China), [172]
Advanced Technology for Developers, [45, 60]
Ann. Oper. Res. (Netherlands), [157, 169]
Artificial Intelligence, [77]
Artificial Intelligence Review, [210]
Artificial Life, [206]
Autom. Prod. Inform. Ind. (France), [130]
Biological Cybernetics, [12, 13, 14, 15, 28, 31, 44]
Br. Telecommun. Eng. (UK), [114]
Complex Systems, [39]
Computer Today, [90]
Computers & Industrial Engineering, [123]
Cybernetics and Systems, [33, 143, 189]
Discrete Applied Mathematics, [118]
Electron. Eng. Aust. (Australia), [190]
Electronics Letters, [128]
European Journal of Operational Research, [82, 107, 155, 199]
Europhysics Letters, [20]
Evolutionary Computation, [25]
Future Generation Computer Systems, [29]
IEEE Spectrum, [85]
IEEE Transactions on Computer-Aided Design of Integrated Circuits and Systems, [61]
IEEE Transactions on Evolutionary Computation, [88, 96, 173]
IEEE Transactions on Systems, Man, and Cybernetics, [35, 162]
IEICE Transactions on Information and Systems, [159]
IJCSNS International Journal of Computer Science and Network Security, [111]
Information Sciences, [84, 211]
Intelligent Automation and Soft Computing, [103]
International Journal of Advanced Manufacturing Technology, [93]
J. Comput. Inf. Technol. CIT (Croatia), [212]
J. Inf. Optimization Sci. (India), [76]
J. KISS(A), Comput. Syst. Theory (South Korea), [197]
J. Korea Inf. Sci. Soc. (South Korea), [148]
J. Syst. Eng. (UK), [126]
Journal of Heuristics, [174]
Journal of Japanese Society for Artificial Intelligence, [74]
Man. Sci., [64]
Math. Comput. Modelling, [135]
Mathematical and Computer Modelling, [125]
Memoirs of the Faculty of Engineering, Fukui University, [69]
Memoirs of the Faculty of Engineering, Okayama University, [136]
Natural Computing, [92]
Neural Computation, [58]
OR Spektrum, [46]
Parallel Processing Letters, [26]
Physical Review Letters, [208, 220]
Science, [86]
SIAM Journal on Optimization, [67]

Systems Analysis – Modeling – Simulation, [19]
 Trans. Soc. Instrum. Control Eng. (Japan), [179, 203]
 Transactions of the Institute of Electronics, Information,
 and Communication Engineers D-1, [195]
 Wirtschaftsinformatik, [43]
 Wuhan Univ. J. Nat. Sci. (China), [166]

total 72 articles in 53 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

Eidgenössische Technische Hochschule Zürich, [218]
 Louisiana State University of Agricultural and Mechanical
 College, [18]
 North Dakota State University of Agriculture and Applied
 Sciences, [24, 42, 68]
 State University of New York at Binghamton, [144]
 Syracuse University, [129]
 The Pennsylvania State University, [122]
 The University of Memphis, [121]
 The University of Tulsa, [116]
 University in Taiwan, [91, 99]
 University of North Carolina at Charlotte, [63]
 University of the West of England, [94]
 University of Turku, [213]

total 15 thesis in 12 schools

4.3.2 Master's theses

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

Brigham Young University, [168]
 Universität Bonn, [53]

total 2 thesis in 2 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.

Christian Brothers University, [137]
 Friedrich-Alexander-Universität Erlangen-Nürnberg, [62]
 MITRE Corporation, [47]
 North Carolina A & T State University, [38]
 Ruhr Universität Mannheim, [17]
 Université de Bruxelles, [202]
 Universität Würzburg, [133]
 University of Illinois at Urbana-Champaign, [98]
 University of Turku, [181]
 University of Vaasa, [221, 222]

total 11 reports in 10 institutes

4.5 Patents

The following list contains the names of the patents of genetic algorithms in TSP. 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 TSP authors and references to their known contributions.

Aamu, Andoo,	[90]	Chatterjee, Sangit,	[155]	Fogarty, Terence C.,	[29, 30]
Aarts, E. H. L.,	[57]	Chellapilla, I.,	[171]	Fogel, David B.,	[85, 171, 31, 32, 33, 34]
Affenzeller, Michael,	[105]	Chen, Gwo-Dong,	[146]	Freisleben, Bernd,	[156, 184]
Aizawa, J.,	[193]	Chen, Huiqin,	[111]	Frick, A.,	[188]
Alander, Jarmo T.,	[11, 221, 222]	Chen, J. C.,	[93]	Fujikawa, H.,	[193]
Aldana Montes, José Francisco,	[132]	Cheng, Runwei,	[123]	Fujikawa, Hideji,	[150]
Alves, J. C.,	[113]	Cochrane, P.,	[114]	Fukuda, Toshio,	[160, 203]
Alves, José C.,	[110]	Cohoon, James P.,	[194]	Fuquay, D'Ann,	[70]
Ambati, Balamurali Krishna,	[12, 13]	Corcoran, Arthur L.,	[131]	Gambardella, Luca M.,	[173, 202, 206]
Ambati, Jayakrishna,	[12, 13]	Corcoran, III, Arthur Leo,	[116]	Gammack, John G.,	[29]
Amin, S.,	[114]	Cotta Porras, Carlos,	[132]	Garigliano, Roberto,	[54]
Amini, Mohammad M.,	[199]	Cui, Jun,	[29, 30]	Gause, Donald C.,	[120, 143]
Amini, Mohammed M.,	[137]	Dabs, Tanja,	[133]	Gen, Mitsuo,	[123, 200]
Arita, M.,	[180]	Dai, Xiaoming,	[97]	Gold, Sönke-Sonnich,	[62]
Avila-Roman, J. M.,	[104]	Daskin, Mark S.,	[107]	Goldberg, David E.,	[36]
Bac, Fam Quang,	[14]	Davoian, K.,	[102, 106]	Goldberg, David,	[98]
Balakrishnan, J.,	[135]	Delgado-Frias, Jose G.,	[120, 143]	Goldstone, Jeffrey,	[86]
Balio, R. Del,	[26]	Dizdarevic, S.,	[210]	Gomez-Pulido, J. A.,	[104]
Bandelt, H.-J.,	[57]	Dong, Yong-feng,	[112]	Gopal, Rajeev,	[37]
Banzhaf, Wolfgang,	[15]	Dorigo, Marco,	[173, 202, 206]	Gorges-Schleuter, Martina,	[175]
Baraglia, R.,	[88]	dos Santos, Pedro Vieir,	[113]	Gorlatch, S.,	[102]
Bertsekas, Dimitri P.,	[191]	Dozier, Gerry V.,	[212]	Graham, Paul S.,	[139, 168]
Beyer, Hans-Georg,	[92, 176, 182, 16, 17]	Drummond, Lucia M.A.,	[138]	Grefenstette, John J.,	[37]
Bitterman, Thomas A.,	[18]	Dzubera, J.,	[117]	Gu, Jun-hua,	[112]
Boettcher, Stefan,	[77]	Ebeling, Werner,	[19, 20]	Guan, Shangchuan,	[38, 39, 49]
Bonachea, Dan,	[78]	Eiben, Ágoston,	[151]	Gucht, Dirk Van,	[37, 40, 67]
Boryczka, U.,	[89]	Eigen, Manfred,	[28]	Guertin, François,	[164]
Boseniuk, Thorsten,	[19, 20, 21]	Eldridge, B. D.,	[103]	Gusfield, D.,	[167]
Bradwell, R.,	[170]	Engst, Norbert,	[62]	Gutierrez-Gil, R.,	[104]
Braun, Heinrich,	[22]	Esterline, Albert C.,	[212]	Gutmann, Sam,	[86]
Brudaru, Octav,	[205]	Falco, I. De,	[26]	Hagiya, M.,	[180]
Buckles, Bill P.,	[23]	Farhi, Edward,	[86]	Han, Huan-ping,	[112]
Bui, Thang Nguyen,	[115]	Farh, Edward,	[86]	Han, Seung-Kee,	[148]
Caro, Gianni Di,	[202, 206]	Faulkner, Graeme,	[134]	Haneda, H.,	[196]
Carrera, Cecilia,	[155]	Feng, Rui,	[97]	He, Zhenya,	[217]
Carrier, Jean-Yves,	[154]	Fernandez-Villanacas, J.-L.,	[114]	Hidalgo, J. I.,	[88]
Caux, Christophe,	[130]	Ferreira, J. C.,	[113]	Hilliard, M. R.,	[48]
		Flores, B.,	[64]	Ho, Cheng Chen,	[99]
				Hogg, Tad,	[84]

- | | | | | | |
|---------------------------|-----------------|--------------------------|----------------------|-------------------------|---------------|
| Holland, J. R. C., | [41] | Kopfer, Herbert, | [46] | Magyar, Gábor, | [181] |
| Homaifar, Abdollah, | [38, 39, 49] | Krasnogor, Natalio, | [81, 94] | Maini, Harpal Singh, | [129] |
| Hoos, H., | [186] | Kuang, Lu, | [166] | Manderick, Bernard, | [50] |
| Horng, Jorng-Tzong, | [146] | Kubota, Naoyuki, | [160] | Maouene, M., | [95] |
| Houdayer, J., | [208, 220] | Kubota, N., | [203] | Martin, Juan, | [150] |
| Hsu, Chin-Chih, | [150, 193] | Kuester, Rebecca L., | [23] | Martin, O. C., | [208, 220] |
| Hsu, Ching-Chi, | [35] | Kuijpers, C. M. H., | [210] | Martin, Worthy N., | [194] |
| Huihe, Shao, | [97] | Kuijpers, Cindy M. H., | [162] | Mathias, Keith E., | [65, 72] |
| Iba, Hitoshi, | [90] | Kundu, Malay K., | [214] | Matsuo, S., | [69] |
| Ikeda, Y., | [69] | Kureichick, V., | [161] | McDaniel, S., | [65] |
| Ingerman, Eugene, | [78] | Laarhoven, P. J. M. van, | [57] | McGeoh, Lyle A., | [100] |
| Inoue, K., | [196] | Lapan, Joshua, | [86] | McPeak, Scott, | [78] |
| Inza, I., | [210] | Laporte, G., | [174] | Megherbi, D., | [207, 219] |
| Isern, G., | [207, 219] | Larrañaga, Pedro, | [162] | Melikhov, A. N., | [161] |
| Jafarian, Javad, | [109] | Larrañaga, P., | [210] | Merz, Peter, | [156, 184] |
| Jin, Bingyao, | [217] | Lee, Kang-Ku, | [148] | Mesmoudi, S., | [95] |
| Jin, Hui-Dong, | [80] | Lee, Keon-Myung, | [197] | Miagkikh, V. V., | [161] |
| Jog, P. D., | [135] | Lee, Kyung-Mi, | [197] | Mizuno, Takafumi, | [145] |
| Jog, Prasanna, | [40, 67] | Lee, Seong-Whan, | [148] | Mokhtar, Mazen Moein, | [12, 13] |
| Johnson, D. S., | [27] | Leung, Henry, | [154] | Montenegro, Anselmo A., | [138] |
| Johnson, David S., | [100] | Leung, K. S., | [119] | Moon, Byung Ro, | [115] |
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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^AT_EX and reproduced from camera-ready copy supplied by the editor. The ones who are familiar with B_IB_TE_X 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_IB_TE_X 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.

Vaasa Genetic Algorithm Bibliography

Search & Optimise

Main features:

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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.

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	190	2009/08/17	GA in acoustics
gaAIbib.pdf	2566	2013/06/14	GA in artificial intelligence
gaAERObib.pdf	854	2009/01/07	GA in aerospace
gaAGRObib.pdf	405	2012/08/01	GA in agriculture
gaALIFEbib.pdf	181	2009/07/24	GA in artificial life
gaARTbib.pdf	170	2010/08/12	GA in art and music
gaAUSbib.pdf	720	2013/05/14	GA in Australia and New Zealand
gaBASICSbib.pdf	1177	2014/04/28	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	938	2009/07/24	GA in chemical sciences ; previously in gaCHEMPHYSbib.ps.Z
gaCHEMPHYSbib.ps.Z	2277		GA in chemistry and physics; divided into gaCHEMbib.ps.Z and gaPHYSbib.ps.Z 2002
gaCIVILbib.pdf	1068	2009/01/07	GA in civil, structural, and mechanical engineering
gaCODEbib.pdf	377	2008/03/20	GA coding
gaCOEVObib.pdf	232	2008/09/18	co- and differential evolution GA
gaCONTROLbib.pdf	1881	2012/08/08	GA in control and process engineering
gaCSbib.pdf	1453	2008/03/20	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	435	2013/11/18	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	1521	2012/09/21	GA and fuzzy logic
gaGAMEbib.pdf	140	2014/05/06	GA and games
gaGEObib.pdf	436	2011/12/28	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	204	2013/10/28	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	649	2003/07/09	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	739	2012/08/01	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	1883	2012/06/28	GA in neural networks
gaNORDICbib.pdf	1125	2013/11/18	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	1704	2012/07/30	GA in operations research

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<i>file</i>	<i># refs</i>	<i>updated</i>	<i>contents</i>
gaPARAbib.pdf	833	2012/07/30	Parallel and distributed GA
gaPARETObib.pdf	469	2009/03/24	Pareto optimization
gaPATENTbib.pdf	462	2009/07/27	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	976	2012/06/28	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
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gaSAbib.pdf	331	2009/07/24	GA and simulated annealing
gaSCHEDULINGbib.pdf	862	2011/12/29	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

Table A.1: Indexed genetic algorithm special bibliographies available online in directory <http://lipas.uwasa.fi/~TAU/reports/report94-1>. New updates only as .pdf files.

The Travelling Salesman Problem (TSP) is a classic combinatorial optimization problem, which is simple to state but very difficult to solve. This problem is known to be NP-hard, and cannot be solved exactly in polynomial time. Many exact and heuristic algorithms have been developed in the field of operations research (OR) to solve this problem. In this paper proposed by Angel Goñi Moreno "SOLVING TRAVELLING SALESMAN PROBLEM IN A SIMULATION OF GENETIC ALGORITHMS WITH DNA" (7) it is explained how to solve a fully connected N-City travelling salesman problem (TSP) using a genetic algorithm. A crossover operator to use in the simulation of a genetic algorithm (GA) with DNA is presented. This paper is a survey of genetic algorithms for the traveling salesman problem. Genetic algorithms are randomized search techniques that simulate some of the processes observed in natural evolution. In this paper, a simple genetic algorithm is introduced, and various extensions are presented to solve the traveling salesman problem. Computational results are also reported for both random and classical problems taken from the operations research literature.

Keywords.