BIBLIOGRAPHY OF SELF-ORGANIZING MAP (SOM) PAPERS: 2002–2005 ADDENDUM

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ABSTRACT: Two comprehensive lists of articles on the Self-Organizing Map (SOM) have been published earlier in the Neural Computing Surveys. They contain references to scientific papers that deal with analyses and applications of the SOM, or have essentially benefited from the SOM. The previous lists together contained 5384 papers from the years 1981-2001. The present addendum contains 2333 new articles on the SOM from the years 2002-2005. We have also provided a keyword index to help finding the articles of interest.

KEYWORDS: self-organizing map, bibliography
1 INTRODUCTION

The Self-Organizing Map algorithm [ii, iii, i] was introduced in 1981. The earliest applications were mainly in the area of engineering. Later the algorithm has become progressively more accepted as a standard data analysis method in a wide variety of fields that can utilize unsupervised learning: clustering, visualization, data organization, characterization, and exploration. The variant called Learning Vector Quantization (LVQ) has additionally been used extensively in supervised tasks, especially classification and supervised pattern recognition.

Two comprehensive lists of articles on the Self-Organizing Map (SOM) have been published earlier in the Neural Computing Surveys [iv, v]. They contain references to scientific papers that deal with analyses and applications of the SOM, or have essentially benefited from the SOM. The previous lists together contained 5384 papers from the years 1981-2001. The present addendum contains 2333 new articles on the SOM from the years 2002-2005.

Many of the papers on SOM analyze the method or present variants or generalizations of it. Most of the papers, however, apply the method or its variants in fields ranging from engineering (including image and signal processing and recognition, telecommunications, process monitoring and control, and robotics) and natural sciences to medicine, humanities, economics and mathematics. The definitive reference to the state of the art in SOMs is [i].

1.1 Collection method

We have been collecting a bibliography of scientific papers on SOM already for many years. Our criterion in selecting papers has been that they should either use or analyze the SOM, or benefit from it in some other manner. Our intention has been to exclude papers that merely refer to the algorithm.

Several methods have been used in collecting the bibliography. We have added references to papers that have appeared in the journals and conference proceedings that we personally follow. In addition, several authors have kindly helped us by sending us bibliographies on their own papers. Finally, we have made searches in commonly used bibliographic databases.

We intend to maintain the bibliography in the future. New entries are planned to be included as addenda in this journal. Additionally, the entries will be available in BibTeX format at the WWW address http://www.cis.hut.fi/research/refts/

Additions to the list and error reports are most welcome; please send any correspondence to the email address biblio@mail.cis.hut.fi.

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1 This address may change in the future due to the restructuring of the university. Helsinki University of Technology will become Aalto University School of Science and Technology from the beginning of year 2010. Presumably the new address will be easily found with some suitable Web search tool using the title as the query.
1.2 Advice on using the bibliography

We have constructed a keyword index to aid in exploring the vast bibliography. Unfortunately, it would have been infeasible to compile manually a complete index of the whole collection of papers, and we have therefore constructed a keyword index. The keywords included are mainly based on the earlier bibliographies. The papers were chosen mostly automatically based on the words that appear in their titles or abstracts, and therefore the index cannot be as well-organized as a manually generated one. For example, all of the papers that treat speech recognition cannot be found using the index entry speech. On the other hand, some index terms may contain references to several kinds of papers. For example, it may be clear that all of the papers that contain the word growing do not analyze growing SOMs.

Despite the problems mentioned above we felt that it was important to make every possible clue of useful information available; it would be a totally infeasible task to browse through the complete list of papers when searching for papers on a specific topic. We hope that this compilation approves to be useful for all those who conduct research on the theory and applications of the Self-Organizing Map.

REFERENCES


peptides [244] [1572] [871] [969]
phoneme [578] [1048] [1049] [95] [78] [77]
PicSOM [1058] [1642]
plasma [114] [1206]
power systems [1713]
prediction [2214] [2213] [2174] [1609] [357] [365] [1383] [491] [493] [734] [1752] [1245] [1721] [400] [1680] [632] [339] [1503] [1820] [614] [1366] [111]
[2106] [2191] [2175] [128] [204] [1272] [140] [2107] [942] [1899] [1630] [219] [494] [1258] [1786] [1502] [1188] [448] [624] [1631] [1257] [1905]
[377] [1954] [2153] [1152] [1379] [2177]
preprocessing [2227] [1822] [873]
probabilistic [467] [953] [2004] [653] [789] [1424] [1602] [316] [2165] [1854] [321]
projection [1118] [2257] [2256] [1096] [1590] [2152] [1981] [168] [597] [2151] [1718] [322] [468] [2320] [2248]
projection pursuit
protein [1451] [1752] [1245] [2297] [1721] [580] [2244] [1904] [1200] [1270] [1008] [2123] [301] [300] [502] [302] [1583] [1599]
pruning [2027] [286] [1100] [1902]
PSOM [74] [976]
QAM [1512] [2114]
radar [721] [2274] [341] [474] [663] [2265] [1971] [1410] [662] [1613]
RBF [2290] [863] [1861] [2195] [2162] [2166] [2128] [1109]
retrieval [584] [583] [585] [1159] [304] [416] [1552] [2231] [463] [2150] [740] [815] [1496] [1057] [2009] [162] [196] [318] [1932] [2164] [1001] [1722] [1058] [940] [306] [998] [1002] [1061] [139] [999] [1015] [2039] [57] [1393] [1243] [1642] [1277] [1862] [2008] [2190] [690]
robotics [914]
robust [915] [45] [44] [1617] [106] [1378] [641] [1905] [821] [468] [1938] [2183] [966]
satellite [1668] [325] [1675] [516] [665] [1286] [1500] [1501] [2307] [1424]
segmentation [2275] [34] [262] [1481] [429] [1390] [492] [431] [553] [554] [1073] [582] [601] [602] [604] [555] [1247] [1775] [1800] [770] [1099] [955] [1163] [2125] [1031] [1115] [1858] [864] [170] [819] [1105] [1030] [1566] [1051] [1039] [332] [1197] [1828] [1974] [1356] [1380] [2249] [1141] [1558] [775] [1032] [1682] [1670] [1671] [1479] [1854] [2327] [929] [1281] [433] [1790] [328] [778] [2276]
seismic [476] [758] [1298]
semantic [1354] [312] [1089] [2078] [2306] [487] [1611] [2230] [1582] [57] [59] [1242] [2190]
sequence [4] [47] [437] [2284] [1908] [1116] [2268] [399] [2285] [511] [1048] [1049] [1828] [1467] [1873] [1874] [1471] [1420] [1583] [1267] [1755] [1253] [1256] [1716] [1768] [7] [6] [83] [1230] [2176]
signature [1453] [1785] [673] [5] [2051] [1292] [1842] [1477] [816] [1317] [3]
silicon [1910]
software [1609] [2286] [607] [1454] [458] [2124] [959] [564] [1648] [1267] [1925]
speaker [166] [1079] [482] [822] [95] [78]
spectrometry [1271] [114] [1200] [993]
spectrum [373] [289] [1301]
speech [578] [582] [482] [577] [1720] [1251] [78] [1846] [1560] [1559] [1562] [1561] [641] [642] [1802]
speech recognition [578] [1720] [641] [1642]
subspace [1194] [1993] [933] [935] [936] [468] [2318]
voice [166] [2029] [606] [2032] [2028]
water [1750] [192] [569] [570] [829] [830] [1530] [1728] [257] [831] [292] [191]
[193] [201] [851] [733] [331] [1982] [832] [590] [1433] [1594] [1220] [778]
[1527]
wavelet [674] [1127] [378] [568] [1250] [1717] [613] [1548] [558] [1126] [961] [960]
[139] [1956] [1487] [906] [2292] [2293] [1213] [273] [2327] [1973] [1214]
[1613] [737] [1612]
weather [1103] [847]
WEBSOM [1494] [100] [1062] [1895]
word [1355] [1159] [100] [2047] [1170] [1171] [1175] [987] [1242] [1277] [1802]
[2277]
REFERENCES


[92] M. Aupetit, P. Couturier, and P. Massotte. gamma-observable neigh-

bours for vector quantization. Neural Networks, 15(8-9), October-
November 2002.


vector machines (SVMs) performance using hierarchical clustering.
In Proceedings. 16th IEEE International Conference on Tools-with-

[95] M. M. Awais, S. Masud, S. Shamail, and J. Akhtar. A hybrid multi-
layered speaker independent arabic phoneme identification system.
In Intelligent Data Engineering and Automated Learning IDEAL
2004. 5th International Conference. Proceedings Lecture Notes in

[96] D. Axelson, I. J. Bakken, I. S. Gribbestad, B. Ehrnholm, G. Nilsen,
and J. Aasly. Applications of neural network analyses to in vivo H-1

[97] Joshua T Ayers, Aaron Clauset, Jeffrey D Schmitt, Linda P Dwoskin,
and Peter A Crooks. Molecular modeling of mono- and bis-
quaternary ammonium salts as ligands at the alpha4beta2 nicotinic
acetylcholine receptor subtype using nonlinear techniques. Aaps J,

[98] A. P. Azcarraga, Tat Seng Chua, and J. Tan. Retrieving news sto-
ries from a news integration archive. In Digital-Libraries: People,
Knowledge, and Technology. 5th International Conference on Asian-

salient dimensions for automatic SOM labeling. Ieee Transactions
on Systems Man and Cybernetics Part C-Applications and Reviews,
35(4), November 2005.

selection methods for WEBSOM text archives. IEEE Transactions
on Knowledge and Data Engineering, 16(3):380–383, March 2004.

equalizer for nonlinearly distorted OFDM signals. International
Journal of Knowledge Based and Intelligent Engineering Systems.


REFERENCES


[244] C. A. Del Carpio, T. Hennig, S. Fickel, and A. Yoshimori. A combined bioinformatic approach oriented to the analysis and design of peptides with high affinity to MHC class I molecules. Immunology and Cell Biology, 80(3), June 2002.


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[682] Hidenori Hayashi, Takashi Abe, Mitsuo Sakamoto, Hiroki Ohara, Toshimichi Ikemura, Kazuo Sakka, and Yoshimi Benno. Direct


[989] Teuvo Kohonen. The SOM: how was it invented, what is its connection to the brain, and how can it be generated. In *Proceedings of the Workshop on Self-Organizing Maps (WSOM’03)*, Kitakyushu, Japan, September 2003.


REFERENCES


REFERENCES


REFERENCES


[1145] S. T. Li and L. Y. Shue. Data mining to aid policy making in air pollu-

algorithms for supervised classification of multi-dimensional data.


REFERENCES


[1202] Jianyong-Li Longhan-Cao, Changxiu-Cao, Zhen-Guo. The research of fault diagnosis for fuel injection system of diesel engine with ANN based on rough sets theory. In Proceedings of the 4th World Congress
REFERENCES


130 REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


REFERENCES


[1656] Hui Ren, Jia Liu Gu, Er Min He, and Zhi Yu Zhang. Classification and identification of the rotor rub-impacting chaotic signals with


Workshop on Self-Organizing Maps (WSOM’03), Kitakyushu, Japan, September 2003.


REFERENCES


REFERENCES


REFERENCES


<table>
<thead>
<tr>
<th>Report No.</th>
<th>Author(s)</th>
<th>Title</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>TKK-ICS-R13</td>
<td>Jorma Laaksonen</td>
<td>Definition of enriched relevance feedback in PicSOM.</td>
<td>November 2008</td>
</tr>
<tr>
<td>TKK-ICS-R16</td>
<td>Antti E. J. Hyvärinen</td>
<td>Approaches to Grid-Based SAT Solving.</td>
<td>June 2009</td>
</tr>
<tr>
<td>TKK-ICS-R17</td>
<td>Tuomas Launiala</td>
<td>Model checking PSL safety properties.</td>
<td>August 2009</td>
</tr>
<tr>
<td>TKK-ICS-R20</td>
<td>Kristian Nybo, Juuso Parkkinen, Samuel Kaski</td>
<td>Graph Visualization With Latent Variable Models.</td>
<td>September 2009</td>
</tr>
</tbody>
</table>