Title: ANALOG IMPLEMENTATION OF LINEAR TRANSFORMS

Abstract: Analog phase-shift elements (10) connect each of a plurality of input nodes (1-M) to each of a plurality of output nodes (1-N), wherein each component is adapted to produce a phase shift in a periodic signal processed therethrough. A linear transformation of a data set of discrete values of a given function provided as a set of analog signals to the input nodes is achieved by judiciously adjusting the signal amplitude produced at the output of the phase-shift components and summing the resulting output signals as required to simulate the transformation of interest.
(88) Date of publication of the international search report:
9 December 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) : HO4J 11/00
US CL. : 370/270
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
U.S. : 370/270, 208, 203; 708/820, 821; 330/107, 149

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
Please See Continuation Sheet

C. DOCUMENTS CONSIDERED TO BE RELEVANT

<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>US 6,295,547 B1 (ZHANG et al) 25 September 2001, col. 6, lines 64+.</td>
<td>1,3,11,12,16-20,27,32-34</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,4-10,13-15,21-26,28-31,35</td>
</tr>
<tr>
<td>Y</td>
<td>US 6,211,314 B1 (AHN) 03 April 2001, fig. 1 and col. 5, lines 14-60.</td>
<td>2,13,21-26,28,31,35</td>
</tr>
<tr>
<td>Y</td>
<td>US 5,237,629 A (HIETALA et al) 17 August 1993, col. 1, lines 28-33 and col. 2, lines 44-68.</td>
<td>4-10,14,15,22-26,29,31</td>
</tr>
<tr>
<td>A</td>
<td>US 5,959,875 (KAWAHARA et al) 28 September 1999, see entire document.</td>
<td>1-35</td>
</tr>
</tbody>
</table>

* Further documents are listed in the continuation of Box C.  

See patent family annex.

* Special categories of cited documents:
**A** document defining the general state of the art which is not considered to be of particular relevance
**E** earlier application or patent published on or after the international filing date
**L** document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another document or other special reason (as specified)
**O** document referring to an oral disclosure, use, exhibition or other means
**P** document published prior to the international filing date but later than the priority date claimed

Date of the actual completion of the international search

Date of mailing of the international search report
11 AUG 2004

Name and mailing address of the ISA/US
Mail Stop PCT. Attn: ISA/US Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450
Facsimile No. (703) 305-3230

Authorized officer
Kenneth Wieder
Telephone No. 703-305-7000

Form PCT/ISA/210 (second sheet) (July 1998)
Continuation of B. FIELDS SEARCHED Item 3:
USPAT; EPO; JPO; DERWENT; IBM_TDB
analog with fourier wavelet inverse linear