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(54) **Elevator dispatching.**

(57) Elevator control software uses a signal from a passenger weight sensor and observed weight fuzzy logic sets to provide a fuzzy logic set indicative of the number of passengers in a car. The traffic mode of an elevator system is set according to the number and frequency of passengers departing and arriving at a building lobby. The utility of assigning each car of an elevator system to service a hall call is determined by estimating the performance of each car using a plurality of performance criteria. The number of hall passengers waiting at a stop for service by a car is determined by first calculating instantaneous passenger rates whenever a hall call button is pressed or whenever passengers board a car. An uncertainty filter is provided with input data indicating a fuzzy logic set having basis elements corresponding to cars of an elevator system having degrees of membership associated therewith corresponding to the utility of assigning the associated car to service a hall call.



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EUROPEAN SEARCH REPORT

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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|---|--|---|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.5) |
| A | GB-A-2 235 311 (HITACHI LTD.) * page 17, line 13 - page 19, line 3; figures 3,4 * * page 38, line 23 - page 40, line 20; figure 12 * * page 44, line 22 - page 50, line 6; figure 14 * | 1,6,8 | B66B1/20 |
| A | * page 27, line 14 - page 32, line 22; figure 7 * | 14,19,20 | |
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| A | US-A-3 999 631 (IWASAKA ET AL.) * column 2, line 4 - line 41 * * column 6, line 26 - column 17, line 41; figures 3,14,15 * | 1,6,8,21 | |
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| X | GB-A-2 215 488 (FUJITEC CO LTD) * page 4, line 8 - page 7, line 3 * * page 12, line 9 - page 17, line 5; figures * | 14-16, 19,20 | |
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| A | GB-A-2 195 792 (KABUSHIKI KAISHA TOSHIBA) * page 5, line 50 - page 18, line 39; figures 11,14,18,19 * | 14,19,20 | TECHNICAL FIELDS SEARCHED (Int. Cl.5) |
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| P,X | GB-A-2 245 998 (MITSUBISHI DENKI K.K.) * page 7, line 12 - page 11, line 2; figures 3-6 * | 14,15, 19,20 | B66B |
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| A | US-A-4 802 557 (UMEDA ET AL.) * column 5, line 23 - line 42 * | 21,22 | |
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| A | EP-A-0 348 152 (OTIS ELEVATOR COMPANY) * page 3, line 54 - page 4, line 11 * * page 7, line 48 - line 51 * * page 9, line 45 - line 51 * * page 10, line 42 - page 11, line 46 * | 21 | |
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| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 04 MARCH 1993 | Examiner SAAW L.J. |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons</p> <p>& : member of the same patent family, corresponding document</p> | | | |

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CLAIMS INCURRING FEES

The present European patent application comprised at the time of filing more than ten claims.

- ☐ All claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims and for those claims for which claims fees have been paid,
namely claims:
- ☐ No claims fees have been paid within the prescribed time limit. The present European search report has been drawn up for the first ten claims.

LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,
namely:

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- ☒ All further search fees have been paid within the fixed time limit. The present European search report has been drawn up for all claims.
- ☐ Only part of the further search fees have been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the inventions in respect of which search fees have been paid,
namely claims:
- ☐ None of the further search fees has been paid within the fixed time limit. The present European search report has been drawn up for those parts of the European patent application which relate to the invention first mentioned in the claims,
namely claims:



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| DOCUMENTS CONSIDERED TO BE RELEVANT | | | |
|--|--|---|---|
| Category | Citation of document with indication, where appropriate, of relevant passages | Relevant to claim | CLASSIFICATION OF THE APPLICATION (Int. Cl.5) |
| A | DE-A-2 459 887 (HITACHI LTD.) * page 4, line 23 - page 5, line 6 * * page 14, line 13 - page 16, line 24; figures 3,4 * | 21 | |
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| P,A | | 26-34 | |
| A | PATENT ABSTRACTS OF JAPAN vol. 14, no. 19 (M-919)16 January 1990 & JP-A-12 61 176 (MITSUBISHI ELECTRIC CORP.) * the whole document * | 25 | |
| | | | TECHNICAL FIELDS SEARCHED (Int. Cl.5) |
| The present search report has been drawn up for all claims | | | |
| Place of search THE HAGUE | | Date of completion of the search 04 MARCH 1993 | Examiner SAAW L.J. |
| <p>CATEGORY OF CITED DOCUMENTS</p> <p>X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document</p> <p>T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document</p> | | | |

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LACK OF UNITY OF INVENTION

The Search Division considers that the present European patent application does not comply with the requirement of unity of invention and relates to several inventions or groups of inventions,

namely:

1. Claims 1-13 : Methods and apparatus for determination of the number of in-cage passengers with the help of fuzzy logic.
2. Claims 14-20 : Assigning a cage to a hall call after fuzzy logic consideration.
3. Claims 21-24 : Determination of the number of waiting passengers with fuzzy logic.
4. Claims 25-34 : Selecting a traffic mode with fuzzy logic operations.