METHOD FOR AUTOMATICALLY RE-JOINING A ROUTE OF AN AIRCRAFT

Abstract: Method for automatically re-joining a route of an aircraft. The present invention relates to the field of aeronautics. It relates notably to a method for automatically calculating a trajectory for an aircraft to re-join of a reference route of the aircraft executed iteratively, in particular when the aircraft is no longer locked onto its reference route, each iteration comprising a step of detection (310) of deviation from the active segment of said route; if the deviation from the active segment of said route is detected, the method comprises a step of selection (320) of a route segment to be re-joined, a step of calculation (330) of a re-joining trajectory between a starting point and said route segment to be re-joined, and a step of validation (340) of the trajectory of said route segment to be re-joined. In the case where this trajectory is validated, the method according to the invention comprises a step of assignment (350) of the re-joining trajectory for the segment to the re-joining trajectory for the route. Otherwise, it comprises a step of verification (360) of the existence of a next route segment fulfilling a selection condition. If a next route segment fulfills a selection condition, it comprises a step of selection (370) of said next route segment as route segment to be re-joined, and a return to the step of calculation (330) of a re-joining trajectory for the route segment to be re-joined. If no route segment fulfills the selection condition, it comprises a step of application (380) of an exit procedure. The invention relates also to a system and a computer program for imple-
(88) Date of publication of the international search report:

29 September 2016
A. CLASSIFICATION OF SUBJECT MATTER

INV. G01C21/00 G01C23/00 G05D1/02 G08G5/00

ADD.

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)
G01C G08G G05D

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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<td>US 2009/076721 AI (COULMEAU F; GOUTELARD H; SACLE J) 19 March 2009 (2009-03-19)</td>
<td>1, 2, 16, 17</td>
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<td>abstract</td>
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<td>paragraphs [0002], [0009], [0036], [0048], [0072], [0080], [0091]</td>
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<td></td>
<td>claims 1-13</td>
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<tr>
<td></td>
<td>figures 1-9</td>
<td></td>
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<td>abstract</td>
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</tr>
<tr>
<td></td>
<td>figures 1-11</td>
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<td>col umn 1, lines 33-36</td>
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<td></td>
<td>claims 1-13</td>
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[X] Further documents are listed in the continuation of Box C. [X] 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
"B" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim[s] on which is cited to establish the publication date of another citation 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

*T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

*X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search
29 February 2016

Date of mailing of the international search report
12/08/2016

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Authorized officer
Toth, Remy
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**INTERNATIONAL SEARCH REPORT**

**Box No. II  Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☑ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box No. III  Observations where unity of invention is lacking (Continuation of item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

   see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☑ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

   1-3, 16, 17

**Remark on Protest**

☐ The additional search fees were accompanied by the applicant’s protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant’s protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.
This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-3, 16, 17
   Initial position of rejoining trajectory

2. claim: 4
   Initialization of the method

3. claims: 5, 6
   Condition of deviation

4. claims: 7, 15
   Selection of a segment

5. claim: 8
   Calculation of the trajectory

6. claims: 9-12
   Validation of the trajectory

7. claims: 13, 14
   Exit procedure
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