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(54) Title: UNMANNED OR OPTIONALLY MANNED VEHICLE, SYSTEM AND METHODS FOR DETERMINING POSITIONAL INFORMATION OF UNMANNED OR OPTIONALLY MANNED VEHICLES

(57) Abstract: Some embodiments are directed to an unmanned vehicle for use with a companion unmanned vehicle. The unmanned vehicle includes a location unit that is configured to determine a current position of the unmanned vehicle. The unmanned vehicle includes a path planning unit that generates a planned path. The unmanned vehicle receives a planned path of the companion unmanned vehicle and a current position of the companion unmanned vehicle. The unmanned vehicle includes a position unit that is configured to determine a relative position between the unmanned vehicle and the companion unmanned vehicle based on at least the planned paths and the current positions of the unmanned vehicle and the companion unmanned vehicle. The unmanned vehicle also includes a control unit that is configured to control a movement of the unmanned vehicle based on at least the relative position between the unmanned vehicle and the companion unmanned vehicle.



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INTERNATIONAL SEARCH REPORT		International application No. PCT/US17/16266												
A. CLASSIFICATION OF SUBJECT MATTER IPC: G05D 1/00(2006.01),1/02(2006.01) CPC: G07C 5/008 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) CPC. : G07C 5/008; G05D 1/0214, 1/0027, 1/02, 1/0206, 1/0202, 1/0246, 1/0278, 1/0022 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 border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;">Category *</th> <th style="width: 70%;">Citation of document, with indication, where appropriate, of the relevant passages</th> <th style="width: 20%;">Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Y</td> <td>US 2010/0114633 A1 (SISLAK et al.) 06 May 2010 (06.05.2010), entire document.</td> <td style="text-align: center;">1-20</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>US 2013/0325210 A1 (PALM) 05 December 2013 (05.12.2013), entire document.</td> <td style="text-align: center;">1-20</td> </tr> <tr> <td style="text-align: center;">Y</td> <td>US 2007/0021879 A1 (DELNERO et al.) 25 January 2007 (25.01.2007), entire document.</td> <td style="text-align: center;">6 and 14</td> </tr> </tbody> </table>			Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	US 2010/0114633 A1 (SISLAK et al.) 06 May 2010 (06.05.2010), entire document.	1-20	Y	US 2013/0325210 A1 (PALM) 05 December 2013 (05.12.2013), entire document.	1-20	Y	US 2007/0021879 A1 (DELNERO et al.) 25 January 2007 (25.01.2007), entire document.	6 and 14
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☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.														
<table style="width: 100%;"> <tr> <td style="width: 50%; vertical-align: top;"> * 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 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 </td> <td style="width: 50%; vertical-align: top;"> "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 "&" document member of the same patent family </td> </tr> </table>			* 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 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 "&" document member of the same patent family										
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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. (571) 273-8300		Authorized officer Harry C. Kim Telephone No. (571) 272-4300												

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Continuation of B. FIELDS SEARCHED Item 3:
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Search Terms: unmanned, automomous, drone, swarm, obstacle