



(51) International Patent Classification:
G06F 3/04815 (2022.01) *G06F 3/01* (2006.01)
G06F 3/04845 (2022.01)

(21) International Application Number:
 PCT/US2023/021563

(22) International Filing Date:
 09 May 2023 (09.05.2023)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
 63/340,444 10 May 2022 (10.05.2022) US
 18/144,746 08 May 2023 (08.05.2023) US

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(81) Designated States (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CV, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY,

(54) Title: SYSTEMS, METHODS, AND GRAPHICAL USER INTERFACES FOR SCANNING AND MODELING ENVIRONMENTS

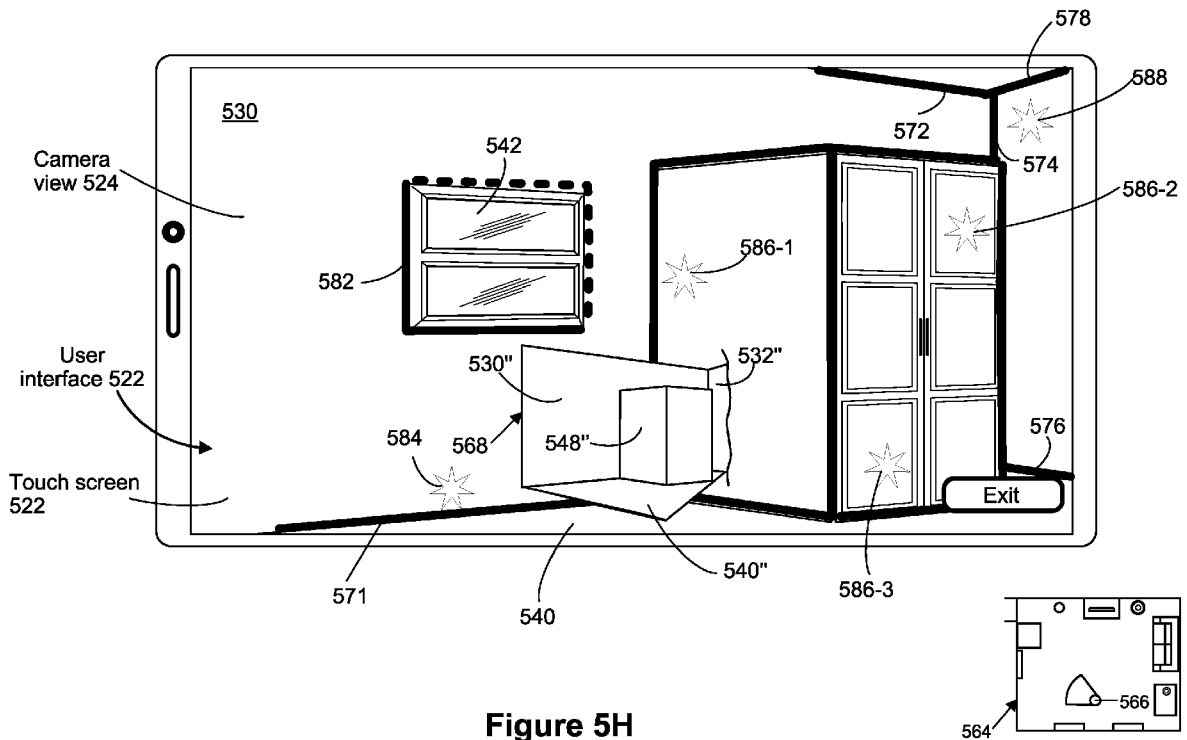


Figure 5H

(57) Abstract: A computer system displays a preview of a three-dimensional model of a physical environment that includes a partially completed three-dimensional model of the physical environment that is displayed with a first orientation that corresponds to a first viewpoint of a user. The computer system detects first movement that changes a current viewpoint of the user in the physical environment to a second viewpoint and updates the preview of the three-dimensional model, including adding additional information to and rotating the partially completed three-dimensional model to a second orientation. While displaying a second view of the physical environment that corresponds to the second viewpoint, the computer system, in response to detecting a first input, updates the preview of the three-dimensional model in the first user interface, including rotating the partially completed three-dimensional model to a third orientation that does not correspond to the second viewpoint of the user.



MA, MD, MG, MK, MN, MU, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SA, SC, SD, SE, SG, SK, SL, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, ZA, ZM, ZW.

- (84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, ME, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

- *with international search report (Art. 21(3))*
- *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

(88) Date of publication of the international search report:

11 January 2024 (11.01.2024)

INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/021563

A. CLASSIFICATION OF SUBJECT MATTER
INV. G06F3/04815 G06F3/04845 G06F3/01
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)
G06F

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2021/097768 A1 (MALIA JOSEPH A [US] ET AL) 1 April 2021 (2021-04-01)	1-4, 7, 8, 13, 14, 20-53, 76-101
A	paragraph [0206] - paragraph [0211]; figures 5A, 5B paragraph [0304] - paragraph [0305] paragraph [0441] - paragraph [0442]; figures 5A, 5B, 12T-12Y -----	5, 6, 9-12, 15-19
X	US 2021/241483 A1 (DRYER ALLISON W [US] ET AL) 5 August 2021 (2021-08-05)	30-53, 76-101
A	paragraph [0208] - paragraph [0272]; figures 5C-5CN -----	1-29
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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 but 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
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- "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
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- "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

Date of the actual completion of the international search

Date of mailing of the international search report

7 December 2023

14/12/2023

Name and mailing address of the ISA/
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INTERNATIONAL SEARCH REPORT

International application No
PCT/US2023/021563

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2021/158427 A1 (APPLE INC [US]) 12 August 2021 (2021-08-12)	30-53, 76-101
A	paragraph [00161] - paragraph [00226]; figures 5C-5CN -----	1-29
X	US 2019/221035 A1 (CLARK ADAM T [US] ET AL) 18 July 2019 (2019-07-18)	30-53, 76-101
A	paragraph [0047] - paragraph [0049] paragraph [0052] paragraph [0075] - paragraph [0081]; figures 1, 6, 7 -----	1-29
A	US 2022/091722 A1 (FAULKNER JEFFREY M [US] ET AL) 24 March 2022 (2022-03-24)	1-53, 76-101
A	paragraph [0171]; figure 7K -----	
A	US 2021/295602 A1 (SCAPEL NICOLAS V [GB] ET AL) 23 September 2021 (2021-09-23)	1-53, 76-101
	paragraph [0109] paragraph [0190] paragraph [0198] - paragraph [0200] paragraph [0246] paragraph [0256]; figures 5A5, 5A6, 5C26-5C28 -----	
A	US 2020/184667 A1 (MILLER MATTHEW D [US] ET AL) 11 June 2020 (2020-06-11)	1-53, 76-101
	paragraph [0007] - paragraph [0008] paragraph [0028] - paragraph [0030] paragraph [0046] - paragraph [0050]; figures 1, 4A-4C -----	

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2023/021563

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.:
1-53, 76-101

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.:

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.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-29

Method, computer system or information processing system, computer readable storage medium storing one or more programs and GUI for constructing, previewing and manipulating a 3-D model of a physical environment acquired by one or more cameras.

2. claims: 30-53, 76-101

Method, computer system or information processing system, computer readable storage medium storing one or more programs and GUI for scanning a physical environment acquired by one or more cameras and indicating spatial properties of objects detected during the scan.

3. claims: 54-75

Method, computer system or information processing system, computer readable storage medium storing one or more programs and GUI for guiding a user scanning a physical environment acquired by one or more cameras.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

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