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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, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.
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(54) **Title:** SYSTEMS AND METHODS TO OPTIMIZE MEDIA PRESENTATIONS USING A CAMERA

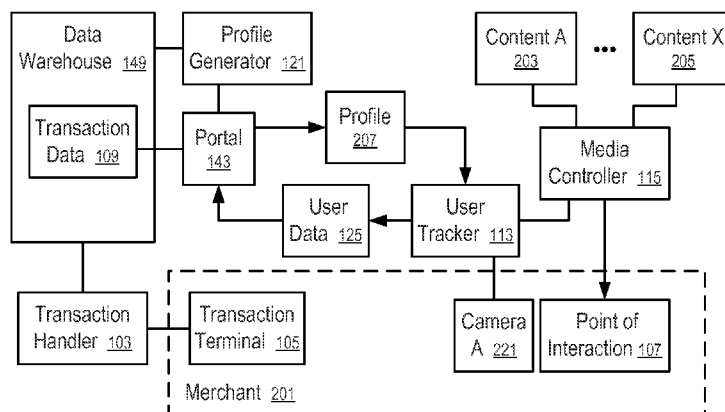


FIG. 11

(57) **Abstract:** In one aspect, a computing apparatus is configured to: capture first images of customers who have watched a digital sign, using a digital camera attached to the digital sign positioned in vicinity of a retail location; identify characteristics of the customers based on the first images; identify, using the characteristics, a subset of customers who have made payment transactions at the retail location through a transaction handler; determine an aggregated spending profile based on transactions of the subset of customers recorded by the transaction handler; and arrange content on the digital sign based on the aggregated spending profile. The computing apparatus may be further configured to capture second images of the customers who have made payment transactions at the retail location through the transaction handler, using a digital camera attached to a point of sale (POS) station at the retail location, and to correlate the first and second images to identify the subset.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2011/046300**A. CLASSIFICATION OF SUBJECT MATTER****G06Q 10/00(2006.01)i, G06Q 20/00(2006.01)i, G06Q 30/00(2006.01)i**

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)

G06Q 10/00; G06Q 99/00; G06Q 30/00; G06K 9/00; H04N 5/445; G06Q 20/00

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

Korean utility models and applications for utility models
Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: CAMERA, CCD, IMAGE, PICTURE, IDENTITY, FACE, FACIAL, RECOGNIZE, IDENTIFY, ANALYZE, ADVERTISE, COMMERCIAL, SIGNAGE, TARGET, PERSONALIZE, CUSTOMIZE, PAY, RETAIL

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 2008-0004953 A1 (WEI-YING MA, et al.) 03 January 2008 See paragraphs [0054]-[0058]; claims 1-13; figures 1,7.	1-20
A	US 2009-0192874 A1 (POWLES BENJAMIN JOHN et al.) 30 July 2009 See paragraphs [0059]-[0063]; claims 21-28; figure 2.	1-20
A	US 2006-0122886 A1 (BRENT MCKAY) 08 June 2006 See the abstract; claims 15-20.	1-20
A	US 7636456 B2 (COLLINS ANDREW et al.) 22 December 2009 See column 5, line 15 - column 6, line 5; claims 13-14; figure 3.	1-20

 Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

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"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

"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

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2008-0004953 A1	03.01.2008	None	
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US 2006-0122886 A1	08.06.2006	None	
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