



- (51) **International Patent Classification:**
G06K 9/00 (2006.01)
- (21) **International Application Number:**
PCT/EP2012/057395
- (22) **International Filing Date:**
23 April 2012 (23.04.2012)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**
- | | | |
|------------|-----------------------------|----|
| 61/478,224 | 22 April 2011 (22.04.2011) | US |
| 13/252,069 | 3 October 2011 (03.10.2011) | US |
| 13/252,072 | 3 October 2011 (03.10.2011) | US |
| 13/252,080 | 3 October 2011 (03.10.2011) | US |
| 13/252,078 | 3 October 2011 (03.10.2011) | US |
- (71) **Applicant (for all designated States except US):** **GENERAL ELECTRIC COMPANY** [US/US]; 1 River Road, Schenectady, New York 12345 (US).
- (71) **Applicant (for MG only):** **GE HEALTHCARE LIMITED** [GB/GB]; Amersham Place, Little Chalfont Buckinghamshire HP7 9NA (GB).
- (72) **Inventor; and**
- (75) **Inventor/Applicant (for US only):** **MCCULLOCH, Colin Craig** [CA/US]; GE Global Research, One Research Circle, Niskayuna, New York 12309 (US).
- (74) **Agents:** **O'BRIEN, Dominic, Paul** et al.; GE Healthcare Limited, Pollards Wood, Nightingales Lane, Chalfont St Giles Buckinghamshire HP8 4SP (GB).
- (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, QA, RO, RS, RU, RW, 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.
- (84) **Designated States (unless otherwise indicated, for every kind of regional protection available):** ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, 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, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:**
— without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) **Title:** ANALYZING THE EXPRESSION OF BIOMARKERS IN CELLS WITH CLUSTERS

(57) **Abstract:** A data set of cell profile data is stored. The cell profile data includes multiplexed biometric image data describing the expression of a plurality of biomarkers. Cell profile data is generated from tissue samples drawn from a cohort of patients having an assessment related to the commonality. Multiple sets of clusters of similar cells are generated from the data set; the proportion of cells in each cluster is examined for an association with a diagnosis, a prognosis, or a response; and a predictive set of clusters is selected based on model performance. One predictive set of clusters is selected based on a comparison of the performance of at least one model of the plurality of sets of clusters. Display techniques that aid in understanding the characteristics of a cluster are disclosed.

