

(51) International Patent Classification:
G06F 3/044 (2006.01)(21) International Application Number:
PCT/US2011/043935(22) International Filing Date:
14 July 2011 (14.07.2011)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
12/838,419 16 July 2010 (16.07.2010) US(71) Applicant (for all designated States except US): **PERCEPTIVE PIXEL INC.** [US/US]; 111 Eighth Avenue, New York, New York 10011 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **WESTHUES, Jonathan** [US/US]; 505 W. 37th Street, #19G, New York, New York 10018 (US). **HAN, Jefferson, Y.** [US/US]; 196-35 McLaughlin Ave., Holliswood, New York 11423 (US).(74) Agents: **DEVOTO, Roberto, J.** et al.; Fish & Richardson P.C., P.O. Box 1022, Minneapolis, MN 55440-1022 (US).

(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.

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, 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).

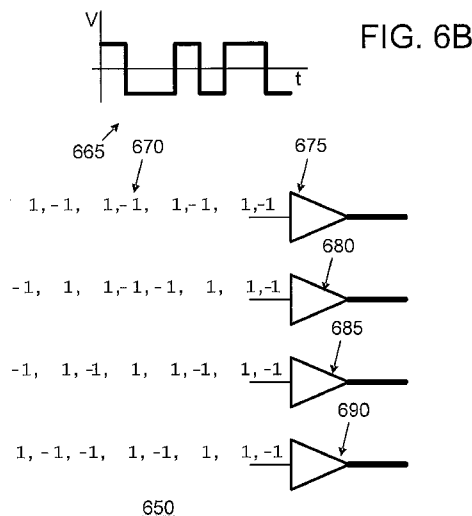
Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

Published:

- without international search report and to be republished upon receipt of that report (Rule 48.2(g))

(54) Title: CAPACITIVE TOUCH SENSOR HAVING CODE-DIVIDED AND TIME-DIVIDED TRANSMIT WAVEFORMS



(57) Abstract: Methods, systems, and apparatus, including computer programs encoded on a computer storage medium, for digital signal processing (DSP) techniques for generally improving a signal-to-noise ratio (SNR) of capacitive touch sensors.