(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
26 September 2013 (26.09.2013)

WIPO | PCT

(10) International Publication Number
WO 2013/140423 A8

(51) International Patent Classification:
G06F 19/00 (2011.01)

(21) International Application Number:
PCT/IT2012/000083

(22) International Filing Date:
23 March 2012 (23.03.2012)

(25) Filing Language: Italian

(26) Publication Language: English

(71) Applicants *(for all designated States except US)*: **DIPARTIMENTO DI INGEGNERIA CIVILE E ARCHITETTURA DELL'UNIVERSITA' DEGLI STUDI DI PAVIA** [IT/IT]; Via Ferrata, 3, 27100 Pavia (IT). **UNIVERSITA' DEGLI STUDI DI PADOVA** [IT/IT]; Via 8 Febbrario 1848,2, 35122 Padova (IT).

(72) Inventors; and

(75) Inventors/Applicants *(for US only)*: **SORU, Paola** [IT/IT]; Via Oberdan, 11, 27100 Pavia (IT). **MAGNI, Lalo** [IT/IT]; Via Manzoni, 15, 27010 Vellezzo Bellini, Pavia (IT). **TOFFANIN, Chiara** [IT/IT]; Via della Chiesa, 6, 27010 Vellzo Belllini, Pavia (IT). **DE NICOLAO, Giuseppe** [IT/IT]; Viale Argonne, 53, 20133 Milano (IT). **DALLA MAN, Chiara** [IT/IT]; Via Cannareggio, 996, 30121 venezia (IT). **COBELLI, Claudio** [IT/IT]; Via S. Eufemia, 3, 35121 Padova (IT).

(74) Agent: **CROCE, Valeria**; c/o Jacobacci & Partners S.p.A., Via Senato, 8, 20121 Milano (IT).

(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).

[Continued on next page]

(54) Title: METHOD FOR CONTROLLING THE DELIVERY OF INSULIN AND THE RELATED SYSTEM

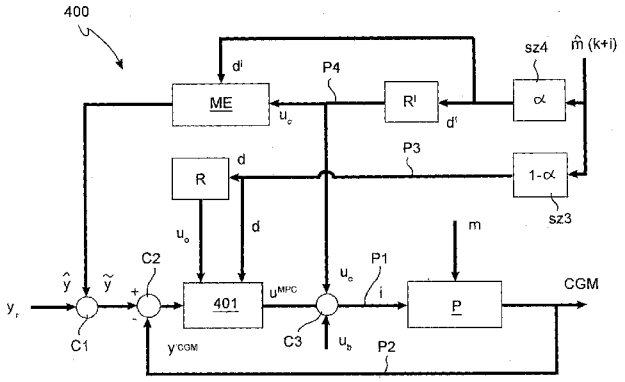


FIG. 4

(57) Abstract: Method (400) for controlling the delivery of insulin in a diabetic patient (P) comprising steps of: providing data (d) representative of at least a fraction of a meal (m(k + i)) that the patient (P) will consume; providing, from a block (R) representative of conventional therapy or open loop rule that the patient (P) is subject to, based on the data (d) representative of at least a fraction of the foreseen meal (m(k + i)) that the patient (P) will consume, a reference insulin value (u_0); providing data representative of the difference between input data ($\hat{y}$), representative of a reference glycemic level, and feedback data (y^{CGM}) representative of the glycemic level detected in the patient (P); providing, by a control module (301; 401), based on the data representative of the difference between the input data (y), representative of the reference glycemic level, and the feedback data (y^{CGM}), representative of the glycemic level detected in the patient (P) and the data (d) representative of at least a fraction of the foreseen meal (m(k + i)) that the patient (P) will consume, data (u^{MPC}) representative of a first insulin variation value; providing, based on the data (u^{MPC}), representative of the first insulin variation value, and data (u_b), representative of a basal insulin value, a value of insulin (i) to be delivered to the patient (P).

WO 2013/140423 A8

WO 2013/140423 A8

Published:

— *with international search report (Art. 21(3))*

(48) Date of publication of this corrected version:
30 January 2014

(15) Information about Correction:
see Notice of 30 January 2014