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(54) Title: ADAPTIVE INTELLIGENCE AND SHARED INFRASTRUCTURE LENDING TRANSACTION ENABLEMENT PLATFORM

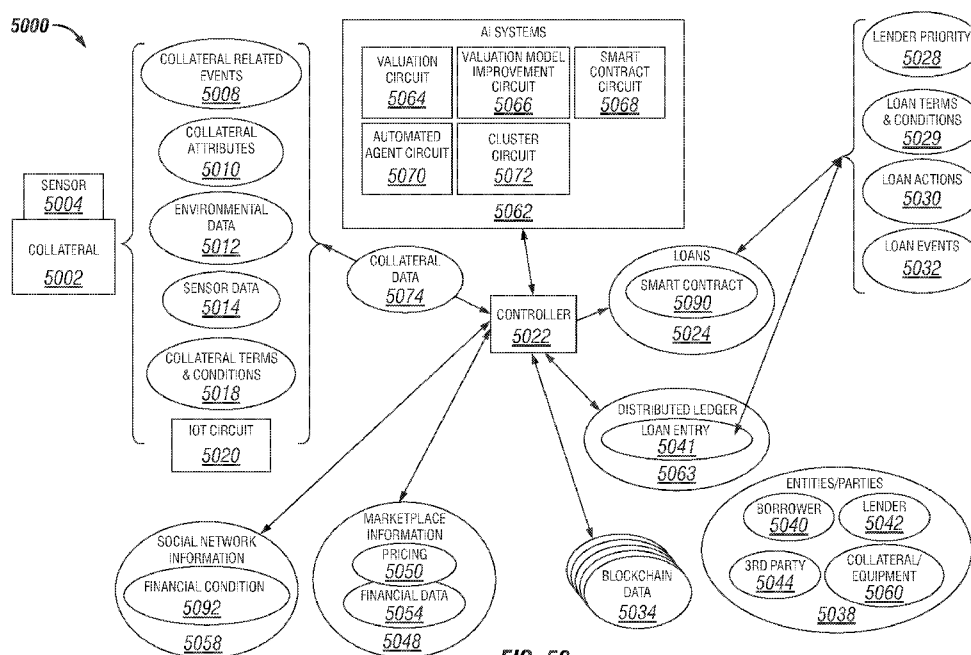


FIG. 50

(57) **Abstract:** Systems, methods, and apparatus for automated execution of loan based activities are disclosed herein. An example system may include a blockchain service circuit to interpret access control features corresponding to parties associated with a loan; a data collection circuit to interpret entity information; a smart contract circuit to specify loan terms and conditions; and a loan management circuit. The loan management circuit may interpret loan related events and implement loan related activities in response to the entity information, the plurality of access control features, and the loan terms and conditions. Each of the blockchain service circuit, the data collection circuit, the smart contract circuit, and the loan management circuit further include a corresponding application programming interface (API) component to facilitate communication among the circuits of the system.



(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, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, LU, LY, MA, MD, ME, MG, MK, MN, 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, 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, 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, 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).

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- with international search report (*Art. 21(3)*)
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20 August 2020 (20.08.2020)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/058647

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.: See extra sheet.
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:
See extra sheet.

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 extra 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 any 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.:

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.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2019/058647**A. CLASSIFICATION OF SUBJECT MATTER****G06Q 40/02(2012.01)i, G06Q 10/06(2012.01)i, G06Q 20/04(2012.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHEDMinimum documentation searched (classification system followed by classification symbols)
G06Q 40/02; G06F 017/60; G06F 21/64; G06Q 40/00; H04L 9/32; G06Q 10/06; G06Q 20/04Documentation 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 modelsElectronic data base consulted during the international search (name of data base and, where practicable, search terms used)
eKOMPASS(KIPO internal) & Keywords: loan, blockchain, terms, transaction, action, smart contract, social network, guarantee, jurisdiction, classification, artificial intelligence, training, robotic, automatic**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 2018-0218176 A1 (SALT LENDING HOLDINGS, INC.) 02 August 2018 See paragraphs [0013], [0034]-[0035], [0049]-[0050], [0054], [0056]-[0057], [0069], [0089]-[0094], [0102], [0124]-[0125], claims 9, 12-15, 18, 20 and figures 2-3.	1-3, 5-7, 9, 11-15 , 151-155, 157-158 , 162, 164-166, 169 , 364, 367, 373, 375 , 512, 519-520 , 524-525, 811-818 , 825-826, 829 , 831-833
Y	US 2003-0033242 A1 (JOAN LYNCH et al.) 13 February 2003 See paragraphs [0010], [0048]-[0054], [0172], claims 1, 8-12, 16, 32, 37 and figure 11c.	1-3, 5-7, 9, 11-15 , 154-155, 368, 373 , 375, 424, 521, 814 , 816
Y	US 2010-0198743 A1 (JOHN E. PLUNKET) 05 August 2010 See paragraph [0096], claims 1-2, 6 and figure 1.	151-155, 157-158 , 162, 164-166, 169
Y	US 7752124 B2 (TIMOTHY T. GREEN et al.) 06 July 2010 See column 2, lines 25-41, column 3, lines 12-33, claim 33 and figures 12-14.	361-368, 373, 375

☒ 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

"D" document cited by the applicant in the international application

"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

"P" document published prior to the international filing date but later than the priority date claimed

"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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Date of mailing of the international search report

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International Application Division

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2019/058647

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 8024262 B2 (SEAN YAT SING TAI et al.) 20 September 2011 See column 11, lines 26-33, column 27, lines 4-22, column 28, lines 1-19 and claim 1.	361-368, 373, 375 , 428-429
Y	US 2008-0133402 A1 (KERRY IVAN KURIAN et al.) 05 June 2008 See paragraphs [0042]-[0043], [0048], [0058], [0062], [0116] and claims 1, 6.	421-430, 432-433
Y	US 2014-0067650 A1 (CLEARMATCH HOLDINGS (SINGAPORE) PTE. LTD.) 06 March 2014 See paragraphs [0011], [0022]-[0025], [0028], [0054], [0068], [0135], [0138], claims 1, 3-6, 9, 12-14, 30-31 and figure 8.	421-430, 432-433 , 811-818, 825-826 , 829, 831-833
Y	US 2014-0172679 A1 (CREDITCIRCLE INC.) 19 June 2014 See paragraph [0040] and claims 1, 8, 14.	422-423, 425-426 , 429
Y	US 2012-0323760 A1 (HAENGJU LEE et al.) 20 December 2012 See paragraphs [0020], [0023], [0057], [0080] and claim 1.	430, 432-433 , 511-513, 517-521 , 524-525
Y	US 2015-0269669 A1 (XEROX CORPORATION) 24 September 2015 See paragraphs [0007], [0022], [0032], [0040], claims 1, 6 and figure 2.	511-513, 517-521 , 524-525, 826 , 832-833

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2019/058647

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2018-0218176 A1	02/08/2018	WO 2018-140913 A1	02/08/2018
US 2003-0033242 A1	13/02/2003	US 2006-0155639 A1	13/07/2006
		US 6823319 B1	23/11/2004
		US 6901384 B2	31/05/2005
		US 7395239 B1	01/07/2008
US 2010-0198743 A1	05/08/2010	US 8306893 B2	06/11/2012
US 7752124 B2	06/07/2010	US 2003-0229581 A1	11/12/2003
		US 2006-0101027 A1	11/05/2006
		US 2009-0177664 A9	09/07/2009
		US 7412417 B1	12/08/2008
US 8024262 B2	20/09/2011	EP 1903496 A1	26/03/2008
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US 2008-0133402 A1	05/06/2008	US 2008-0133391 A1	05/06/2008
US 2014-0067650 A1	06/03/2014	AU 2013-221926 A1	20/03/2014
US 2014-0172679 A1	19/06/2014	DE 102013226320 A1	18/06/2014
US 2012-0323760 A1	20/12/2012	None	
US 2015-0269669 A1	24/09/2015	None	

(Continuation of: Box No. II)

Claims Nos: 4, 8, 10, 16-150, 156, 159-161, 163, 167-168, 170-360, 369-372, 374, 376-420, 431, 434-510, 514-516, 522-523, 526-810, 819-824, 827-828, 830, 834-930

Regarding claims 4, 8, 10, 16-150, 156, 159-161, 163, 167-168, 170-360, 369-372, 374, 376-420, 431, 434-510, 514-516, 522-523, 526-810, 819-824, 827-828, 830, 834-930, see Form ISA/224 mailed on 04 April 2020. PCT Article 6 states that the claims shall be clear concise. Claims 4, 8, 10, 16-150, 156, 159-161, 163, 167-168, 170-360, 369-372, 374, 376-420, 431, 434-510, 514-516, 522-523, 526-810, 819-824, 827-828, 830, 834-930 do not meet this requirement, even assuming for the sake of argument that the individual claims are clear and concise in themselves, because the lack of clarity of the claims as a whole arises from the lack of conciseness. No international search report will be established for claims 4, 8, 10, 16-150, 156, 159-161, 163, 167-168, 170-360, 369-372, 374, 376-420, 431, 434-510, 514-516, 522-523, 526-810, 819-824, 827-828, 830, 834-930.

(Continuation of: Box No. III)

Group I, claims 1-3, 5-7, 9, 11-15, 151-155, 157-158, 162, 164-166, 169, directed to a system comprising: a data collection circuit to receive information related to a lending transaction; and a smart contract circuit.

Group II, claims 361-368, 373, 375, directed to a system comprising: a data collection circuit to determine location; a jurisdiction definition circuit to determine a jurisdiction.

Group III, claims 421-430, 432-433, directed to a system comprising: a social networking input circuit to interpreter a loan guarantee parameter; and a guarantee validation circuit to validate a guarantee.

Group IV, claims 511-513, 517-521, 524-525, directed to a system comprising: an artificial intelligence circuit; and a robotic process automation circuit.

Group V, claims 811-818, 825-826, 829, 831-833, directed to a system comprising: a social network analytic data collection circuit; a condition classifying circuit; and a smart contract circuit.