

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 November 2022 (17.11.2022)



(10) International Publication Number
WO 2022/240906 A1

(51) International Patent Classification:

B33Y 50/02 (2015.01) *G06N 3/00* (2006.01)
B65D 88/12 (2006.01) *H04N 19/00* (2014.01)
B63B 25/00 (2006.01) *G06Q 10/06* (2012.01)
B25J 11/00 (2006.01) *G06Q 10/10* (2012.01)
B25J 9/08 (2006.01) *G06Q 30/02* (2012.01)
B25J 9/16 (2006.01) *G06Q 30/06* (2012.01)
G06F 16/182 (2019.01) *G06Q 40/06* (2012.01)
G06F 16/2458 (2019.01) *H04L 9/00* (2022.01)
G06N 20/00 (2019.01)

63/187,325 11 May 2021 (11.05.2021) US
63/282,507 23 November 2021 (23.11.2021) US
63/299,710 14 January 2022 (14.01.2022) US
63/302,013 21 January 2022 (21.01.2022) US
202211008709 18 February 2022 (18.02.2022) IN

(71) Applicant: **STRONG FORCE VCN PORTFOLIO 2019, LLC** [US/US]; 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US).

(72) Inventors: **CELLA, Charles Howard**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **CARDNO, Andrew**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **PARENTI, Jenna**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **LOCKE, Andrew S.**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US).

(21) International Application Number:

PCT/US2022/028633

(22) International Filing Date:

10 May 2022 (10.05.2022)

(25) Filing Language:

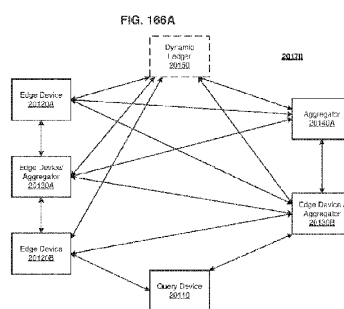
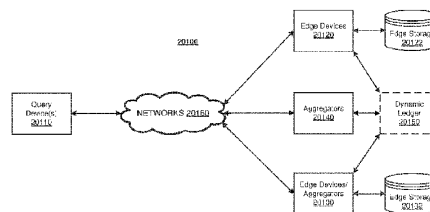
English

(26) Publication Language:

English

(30) Priority Data:

(54) Title: SYSTEMS, METHODS, KITS, AND APPARATUSES FOR EDGE-DISTRIBUTED STORAGE AND QUERYING IN VALUE CHAIN NETWORKS



(57) Abstract: Methods and systems described herein provide a distributed database configured to leverage the storage and processing capabilities of edge devices and a query language for efficiently querying the distributed database system. A database layer of an application stack can be distributed across the nodes of a network including the edge nodes such that vast amounts of data may be stored locally at these nodes to provide access to the data in response to a query. In such a distributed database environment, queries may be received and/or executed by edge distributed node points. According to techniques described herein, the entire network environment may appear as a seamless database, and an Edge Query Language may provide for resolution of the query.

[Continued on next page]

(US). **KELL, Brad**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **EL-TAHRY, Teymour S.**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **GOODMAN, Benjamin D.**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **FORTIN, Leon**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **BUNIN, Andrew**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **SHARMA, Kunal**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **CHARON, Taylor**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US). **MALCHEV, Hristo**; c/o STRONG FORCE VCN PORTFOLIO 2019, LLC, 501 East Las Olas Boulevard, Suite 200, Fort Lauderdale, Florida 33301 (US).

(74) **Agent: NYE, Michael** et al.; 409 E Jefferson Ave, 5th Floor, Detroit, Michigan 48226 (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, 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, IQ, IR, IS, IT, JM, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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).

Published:

- with international search report (Art. 21(3))
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))