

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

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
17 October 2024 (17.10.2024)



(10) International Publication Number
WO 2024/215768 A1

(51) International Patent Classification:

H04L 9/40 (2022.01) G06F 21/50 (2013.01)
H04L 41/16 (2022.01) G06N 20/00 (2019.01)
H04L 43/16 (2022.01)

(21) International Application Number:

PCT/US2024/023888

(22) International Filing Date:

10 April 2024 (10.04.2024)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

63/495,478 11 April 2023 (11.04.2023) US

(71) Applicant: ENTANGLEMENT, INC. [US/US]; 40 Exchange Place, Suite 610, New York, New York 10005 (US).

(72) Inventors: WANG, Haibo; 7615 Laguna Del Mar Court, Unit 169, Laredo, Texas 78041 (US). HENNIG, Richard T.; 9945 Grove Court, Westminster, Colorado 80031 (US).

(74) Agent: PATTERSON, Melissa E.; 12275 El Camino Real, Suite 100, San Diego, California 92130 (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, CV, 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, MG, MK, MN, MU, 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, CV, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SC, 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, ME, 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).

Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))

Published:

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

(54) Title: COMPUTER METHOD FOR RANKED ENSEMBLE FILTERING OF COMPUTER NETWORK TRANSMISSIONS

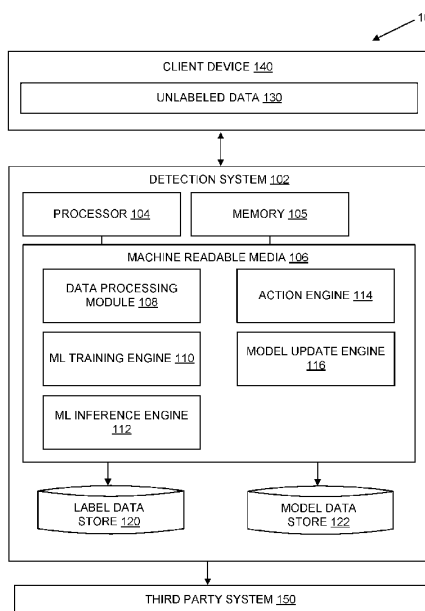


FIG. 1

(57) Abstract: Systems and methods are described for automated anomaly detection. For example, the system receives various types of unlabeled data and determines, through an unsupervised machine learning model, a label for the data. The labels are provided to a supervised machine learning model during a first training process. The system also performs unsupervised labeling and supervised labeling of network flows to infer anomalous network traffic. When new data is received, the supervised machine learning model is executed during an inference process to cluster the new data in accordance with the labels that were determined by the unsupervised machine learning model. In some examples, the system may combine the unsupervised machine learning model with a supervised machine learning model to perform automated anomaly detection.

WO 2024/215768 A1