

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

(19) World Intellectual Property  
Organization  
International Bureau

(43) International Publication Date  
07 October 2021 (07.10.2021)



(10) International Publication Number  
**WO 2021/198838 A1**

- (51) **International Patent Classification:**  
*G10L 15/02* (2006.01) *G10L 15/06* (2013.01)
- (21) **International Application Number:**  
PCT/IB2021/052308
- (22) **International Filing Date:**  
19 March 2021 (19.03.2021)
- (25) **Filing Language:** English
- (26) **Publication Language:** English
- (30) **Priority Data:**  
16/839,976 03 April 2020 (03.04.2020) US
- (71) **Applicant:** **INTERNATIONAL BUSINESS MACHINES CORPORATION** [US/US]; New Orchard Road, Armonk, New York, 10504 (US).
- (71) **Applicants (for MG only):** **IBM UNITED KINGDOM LIMITED** [GB/GB]; PO Box 41, North Harbour, Portsmouth Hampshire PO6 3AU (GB). **IBM (CHINA) INVESTMENT COMPANY LIMITED** [CN/CN]; 25/F, Pangu Plaza, No. 27, Central North 4th Ring Road, Chaoyang District, Beijing 100101 (CN).
- (72) **Inventors:** **KURATA, Gakuto**; IBM Japan Limited, 19-21 Nihonbashi-Hakozakicho, Chuo-ku, Tokyo 13 103-8510 (JP). **AUDHKHASI, Kartik**; IBM Corporation, Intellectual-

al Property Law, 1101 Kitchawan Road, Route 134, PO Box 218, Yorktown Heights, New York 10598 (US).

- (74) **Agent:** **SHAW, Anita**; IBM United Kingdom Limited, Intellectual Property Law, Hursley Park, Hursley, Winchester Hampshire SO21 2JN (GB).

(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, IT, 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,

(54) **Title:** TRAINING OF MODEL FOR PROCESSING SEQUENCE DATA

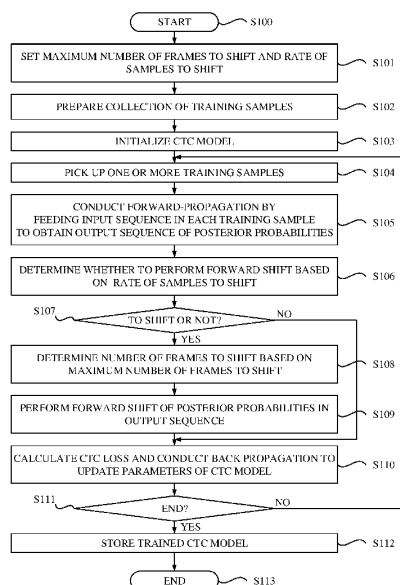


FIG. 5

(57) **Abstract:** A technique for training a model is disclosed. A training sample including an input sequence of observations and a target sequence of symbols having length different from the input sequence of observations is obtained. The input sequence of observations is fed into the model to obtain a sequence of predictions. The sequence of predictions is shifted by an amount with respect to the input sequence of observations. The model is updated based on a loss using a shifted sequence of predictions and the target sequence of the symbols.

WO 2021/198838 A1

[Continued on next page]

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))*