

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT6958981

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	SECURITY INTEREST	
CONVEYING PARTY DATA		
Name		Execution Date
BRAIN CORPORATION		10/04/2021
RECEIVING PARTY DATA		
Name:	HERCULES CAPITAL, INC.	
Street Address:	400 HAMILTON AVENUE, SUITE 310	
Internal Address:	ATTENTION: CHIEF LEGAL OFFICER	
City:	PALO ALTO	
State/Country:	CALIFORNIA	
Postal Code:	94301	
PROPERTY NUMBERS Total: 173		
Property Type	Number	
Patent Number:	8315305	
Patent Number:	8467623	
Patent Number:	8793205	
Patent Number:	8942466	
Patent Number:	8943008	
Patent Number:	8972315	
Patent Number:	8977582	
Patent Number:	8983216	
Patent Number:	8990133	
Patent Number:	8996177	
Patent Number:	9008840	
Patent Number:	9014416	
Patent Number:	9015092	
Patent Number:	9047568	
Patent Number:	9070039	
Patent Number:	9082079	
Patent Number:	9098811	
Patent Number:	9104186	
Patent Number:	9111215	

PATENT

Property Type	Number
Patent Number:	9111226
Patent Number:	9123127
Patent Number:	9152915
Patent Number:	9156165
Patent Number:	9183493
Patent Number:	9189730
Patent Number:	9193075
Patent Number:	9195934
Patent Number:	9208432
Patent Number:	9213937
Patent Number:	9218563
Patent Number:	9224090
Patent Number:	9239985
Patent Number:	9242372
Patent Number:	9248569
Patent Number:	9256215
Patent Number:	9275326
Patent Number:	9296101
Patent Number:	9311593
Patent Number:	9311594
Patent Number:	9314924
Patent Number:	9346167
Patent Number:	9358685
Patent Number:	9364950
Patent Number:	9367798
Patent Number:	9373038
Patent Number:	9384443
Patent Number:	9390369
Patent Number:	9405975
Patent Number:	9489623
Patent Number:	9552546
Patent Number:	9566710
Patent Number:	9579790
Patent Number:	9604359
Patent Number:	9613308
Patent Number:	9687984
Patent Number:	9717387
Patent Number:	9764468

Property Type	Number
Patent Number:	9789605
Patent Number:	9792546
Patent Number:	9821457
Patent Number:	9821470
Patent Number:	9840003
Patent Number:	9844873
Patent Number:	9848112
Patent Number:	9849588
Patent Number:	9860077
Patent Number:	9862092
Patent Number:	9870617
Patent Number:	9873196
Patent Number:	9902062
Patent Number:	9939253
Patent Number:	9950426
Patent Number:	9987743
Patent Number:	9987752
Patent Number:	10001780
Patent Number:	10016896
Patent Number:	10032280
Patent Number:	10055850
Patent Number:	10057593
Patent Number:	10105841
Patent Number:	10131052
Patent Number:	10155310
Patent Number:	10166675
Patent Number:	10184787
Patent Number:	10194163
Patent Number:	10197664
Patent Number:	10241514
Patent Number:	10268919
Patent Number:	10274325
Patent Number:	10282849
Patent Number:	10293483
Patent Number:	10293485
Patent Number:	10295972
Patent Number:	10322507
Patent Number:	10369694

Property Type	Number
Patent Number:	10376117
Patent Number:	10377040
Patent Number:	10379539
Patent Number:	10391628
Patent Number:	10464213
Patent Number:	10507580
Patent Number:	10657409
Patent Number:	10688657
Patent Number:	10717191
Patent Number:	10723018
Patent Number:	10728436
Patent Number:	10728570
Patent Number:	10807230
Patent Number:	10810456
Patent Number:	10818016
Patent Number:	10820009
Patent Number:	10823576
Patent Number:	10843338
Patent Number:	10852730
Patent Number:	10860882
Patent Number:	10895629
Patent Number:	10899008
Patent Number:	10967519
Patent Number:	10989521
Patent Number:	11042775
Patent Number:	11099575
Application Number:	16908038
Application Number:	16269129
Application Number:	16235250
Application Number:	16131128
Application Number:	16454199
Application Number:	16031950
Application Number:	16271234
Application Number:	15495804
Application Number:	15785161
Application Number:	16150609
Application Number:	16447261
Application Number:	16682430

Property Type	Number
Application Number:	16679548
Application Number:	16454695
Application Number:	17231566
Application Number:	63191719
Application Number:	17199721
Application Number:	63182198
Application Number:	63127611
Application Number:	63088583
Application Number:	17145908
Application Number:	17206940
Application Number:	63222593
Application Number:	17313077
Application Number:	63117125
Application Number:	17346386
Application Number:	16268861
Application Number:	17386001
Application Number:	17140468
Application Number:	17149951
Application Number:	17231613
Application Number:	63131643
Application Number:	63093997
Application Number:	17232481
Application Number:	16939779
Application Number:	17205692
Application Number:	16030690
Application Number:	63174701
Application Number:	17157897
Application Number:	15942123
Application Number:	63216613
Application Number:	16168368
Application Number:	63143482
Application Number:	17226471
Application Number:	17176501
Application Number:	17345407
Application Number:	17242362
Application Number:	63154365
Application Number:	16527292
Application Number:	17142669

Property Type	Number
Application Number:	17216775
Application Number:	16199582

CORRESPONDENCE DATA

Fax Number:

Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 16167423945

Email: hkooy@btlaw.com

Correspondent Name: HILLARY KOOY

Address Line 1: 171 MONROE AVE NW, SUITE 1000

Address Line 4: GRAND RAPIDS, MICHIGAN 49503

ATTORNEY DOCKET NUMBER:	81193.12
NAME OF SUBMITTER:	HILLARY KOOY
SIGNATURE:	/s/ Hillary Kooy
DATE SIGNED:	10/08/2021

Total Attachments: 30

source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page1.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page2.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page3.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page4.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page5.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page6.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page7.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page8.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page9.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page10.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page11.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page12.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page13.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page14.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page15.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page16.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page17.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page18.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page19.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page20.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page21.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page22.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page23.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page24.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page25.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page26.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page27.tif

source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page28.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page29.tif
source=05. Hercules - Brain Corp. - IP Security Agreement [Executed] (10.2021)(21076887.1)#page30.tif

INTELLECTUAL PROPERTY SECURITY AGREEMENT

This Intellectual Property Security Agreement is entered into as of October 4, 2021 by and between HERCULES CAPITAL, INC., a Maryland corporation, in its capacity as administrative agent and collateral agent for itself and the Lenders (as defined in the Loan Agreement (as defined below)) (in such capacity, the "Agent") and BRAIN CORPORATION, a California corporation, and each of its Subsidiaries (hereinafter collectively referred to as the "Grantor").

RECITALS

A. Lenders have agreed to make certain advances of money and to extend certain financial accommodation to Grantor (the "Loans") in the amounts and manner set forth in that certain Loan and Security Agreement by and between Agent, the Lenders and Grantor dated the Closing Date (as the same may be amended, modified or supplemented from time to time, the "Loan Agreement"; capitalized terms used herein are used as defined in the Loan Agreement). The Lenders are willing to make the Loans to Grantor, but only upon the condition, among others, that Grantor shall grant to Agent, for the benefit of the Lenders, a security interest in certain Copyrights, Trademarks, Patents, and mask works to secure the obligations of Grantor under the Loan Agreement.

B. Pursuant to the terms of the Loan Agreement, Grantor has granted to Agent, for the benefit of the Lenders, a security interest in all of Grantor's right, title and interest, whether presently existing or hereafter acquired, in, to and under all of the Collateral.

NOW, THEREFORE, for good and valuable consideration, receipt of which is hereby acknowledged, and intending to be legally bound, as collateral security for the prompt and complete payment when due of its obligations under the Loan Agreement, Grantor hereby represents, warrants, covenants and agrees as follows:

AGREEMENT

To secure its obligations under the Loan Agreement, Grantor grants and pledges to Agent, for the benefit of the Lenders, a security interest in all of Grantor's right, title and interest in, to and under its Intellectual Property (including without limitation those Copyrights, Patents and Trademarks listed on Exhibits A, B and C hereto), and including without limitation all proceeds thereof (such as, by way of example but not by way of limitation, license royalties and proceeds of infringement suits), the right to sue for past, present and future infringements, all rights corresponding thereto throughout the world and all re-issues, divisions continuations, renewals, extensions and continuations-in-part thereof (together the "Intellectual Property Collateral"). Notwithstanding the foregoing, the Intellectual Property Collateral shall not include any personal property or other assets excluded from the Collateral pursuant to Section 3.2 of the Loan Agreement.

This security interest is granted in conjunction with the security interest granted to Agent, for the benefit of the Lenders, under the Loan Agreement. The rights and remedies of Agent with respect to the security interest granted hereby are in addition to those set forth in the Loan Agreement and the other Loan Documents, and those which are now or hereafter available to Agent, for the benefit of the Lenders, as a matter of law or equity. Each right, power and remedy of Agent provided for herein or in the Loan Agreement or any of the Loan Documents, or now or hereafter existing at law or in equity shall be cumulative and concurrent and shall be in addition to every right, power or remedy provided for herein and the exercise by Agent of any one or more of the rights, powers or remedies provided for in this Intellectual Property Security Agreement, the Loan Agreement or any of the other Loan Documents, or now or hereafter

existing at law or in equity, shall not preclude the simultaneous or later exercise by any person, including Lender, of any or all other rights, powers or remedies.

Grantor hereby authorizes Agent to file and/or record, in the relevant office(s), including the United States Patent and Trademark Office and the United States Copyright Office, this Intellectual Property Security Agreement and any and all amendments and/or modifications hereto, including to the Exhibits attached hereto from time to time, and other documents, without the signature of Grantor either in Agent's name or in the name of Agent as agent and attorney-in-fact for Grantor.

Sections 11.9 (Governing Law), 11.10 (Consent to Jurisdiction and Venue) and 11.11 (Mutual Waiver of Jury Trial / Judicial Reference) of the Loan Agreement are incorporated herein by this reference as though set forth in full.

[Balance of Page Intentionally Left Blank]

IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the Closing Date.

GRANTOR:

BRAIN CORPORATION

Signature: _____

Print Name: David Pinn

Title: Chief Financial Officer

Address:

Attention: David Pinn, Chief Financial Officer
10182 Telesis Court, Suite 100
San Diego, CA 92121
email: david.pinn@braincorp.com

AGENT:

HERCULES CAPITAL, INC.

Signature: _____

Print Name: Jennifer Choe

Title: Associate General Counsel

Address:

Attention: Chief Legal Officer
400 Hamilton Avenue, Suite 310
Palo Alto, CA 94301
email: legal@htgc.com

[Signature Page to Intellectual Property Security Agreement]

IN WITNESS WHEREOF, the parties have caused this Intellectual Property Security Agreement to be duly executed by its officers thereunto duly authorized as of the Closing Date.

GRANTOR:

BRAIN CORPORATION

Signature: _____

Print Name: _____

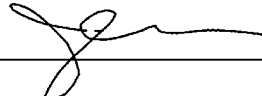
Title: _____

Address:

Attention: David Pinn, Chief Financial Officer
10182 Telesis Court, Suite 100
San Diego, CA 92121
email: david.pinn@braincorp.com

AGENT:

HERCULES CAPITAL, INC.

Signature:  _____

Print Name: Jennifer Choe

Title: Associate General Counsel

Address:

Attention: Chief Legal Officer
400 Hamilton Avenue, Suite 310
Palo Alto, CA 94301
email: legal@htgc.com

[Signature Page to Intellectual Property Security Agreement]

EXHIBIT A

Copyrights

None.

EXHIBIT B

Patents

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23359US00	UNITED STATES	NEW	ADAPTIVE PLASTICITY APPARATUS AND METHODS FOR SPIKING NEURON NETWORK	13/660,923	10/25/2012	9,183,493	11/10/2015	ISSUED
P23396US00	UNITED STATES	NEW	ADAPTIVE PREDICTOR APPARATUS AND METHODS	13/842,530	3/15/2013	9,764,468	9/19/2017	ISSUED
P23396US01	UNITED STATES	CON	ADAPTIVE PREDICTOR APPARATUS AND METHODS	15/707,985	9/18/2017	10,155,310	12/18/2018	ISSUED
P23396US02	UNITED STATES	CON	ADAPTIVE PREDICTOR APPARATUS AND METHODS	16/171,635	10/26/2018	10/688,657	6/23/2020	ISSUED
P23396US03	UNITED STATES	CON	ADAPTIVE PREDICTOR APPARATUS AND METHODS	16/908,038	6/22/2020			PUBLISHED
P23403US00	UNITED STATES	NEW	ADAPTIVE ROBOTIC INTERFACE APPARATUS AND METHODS	13/907,734	5/31/2013	9,242,372	1/26/2016	ISSUED
P23403US01	UNITED STATES	CON	ADAPTIVE ROBOTIC INTERFACE APPARATUS AND METHODS	14/595,163	1/12/2015	9,821,457	11/21/2017	ISSUED
P23295US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR ACTIVITY-BASED PLASTICITY IN A SPIKING NEURON NETWORK	13/660,967	10/25/2012	8,972,315	3/3/2015	ISSUED
P23368US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR BACKWARD PROPAGATION OF ERRORS IN A SPIKING NEURON NETWORK	14/054,366	10/15/2013	9,489,623	11/8/2016	ISSUED
P23375US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR CONTEXT DETERMINATION USING REAL TIME SENSOR DATA	14/489,368	9/17/2014	9,821,470	11/21/2017	ISSUED
P23335US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR CONTROL OF ROBOT ACTIONS BASED ON CORRECTIVE USER INPUTS	14/171,762	2/3/2014	9,358,685	6/7/2016	ISSUED
P23335US01	UNITED STATES	CON	APPARATUS AND METHODS FOR CONTROL OF ROBOT ACTIONS BASED ON CORRECTIVE USER INPUTS	15/174,858	6/6/2016	9,789,605	10/17/2017	ISSUED
P23335US02	UNITED STATES	CON	APPARATUS AND METHODS FOR CONTROL OF ROBOT ACTIONS BASED ON CORRECTIVE USER INPUTS	15/785,181	10/16/2017	10,322,507	6/18/2019	ISSUED
P23335US03	UNITED STATES	CON	APPARATUS AND METHODS FOR CONTROL OF ROBOT ACTIONS BASED ON CORRECTIVE USER INPUTS	16/402,758	5/3/2019	10,843,338	11/24/2020	ISSUED
P23288US01	UNITED STATES	CON	APPARATUS AND METHODS FOR DETECTION OF OBJECTS USING BROADBAND SIGNALS	16/225,949	12/19/2018	10,895,629	1/19/2021	ISSUED
P23288US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR DETECTION OF OBJECTS USING BROADBAND SIGNALS (AFTER FINAL CONSIDERATION PILOT PROGRAM 2.0)	14/804,043	7/20/2015	10,197,664	2/5/2019	ISSUED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23331US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR DISTANCE ESTIMATION USING MULTIPLE IMAGE SENSORS	14/285,414	5/22/2014	9,939,253	4/10/2018	ISSUED
P23331US01	UNITED STATES	CON	APPARATUS AND METHODS FOR DISTANCE ESTIMATION USING MULTIPLE IMAGE SENSORS	15/948,885	4/9/2018	10,184,787	1/22/2019	ISSUED
P23331US02	UNITED STATES	CON	APPARATUS AND METHODS FOR DISTANCE ESTIMATION USING MULTIPLE IMAGE SENSORS	16/214,730	12/10/2018	10,989,521	4/27/2021	ISSUED
P23278US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR DISTANCE ESTIMATION USING STEREO IMAGERY	14/326,374	7/8/2014	10,057,593	8/21/2018	ISSUED
P23278US01	UNITED STATES	CON	APPARATUS AND METHODS FOR DISTANCE ESTIMATION USING STEREO IMAGERY	16/104,646	8/17/2018	10,820,009	10/27/2020	ISSUED
P23366US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR EFFICACY BALANCING IN A SPIKING NEURON NETWORK	13/954,575	7/30/2013	9,552,546	1/24/2017	ISSUED
P23388US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR ENCODING OF SENSORY DATA USING ARTIFICIAL SPIKING NEURONS	13/623,820	9/20/2012	9,047,568	6/2/2015	ISSUED
P23380US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR ENCODING VECTOR INTO PULSE-CODE OUTPUT	13/689,712	11/29/2012	9,152,915	10/6/2015	ISSUED
P23363US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR GATING ANALOG AND SPIKING SIGNALS IN ARTIFICIAL NEURAL NETWORKS	13/761,090	2/6/2013	9,213,937	12/15/2015	ISSUED
P23390US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR GENERALIZED STATE-DEPENDENT LEARNING IN SPIKING NEURON NETWORKS	13/560,902	7/27/2012	9,256,215	2/9/2016	ISSUED
P23336US02	UNITED STATES	CON	APPARATUS AND METHODS FOR HAPTIC TRAINING OF ROBOTS	15/464,104	3/20/2017	9,844,873	12/19/2017	ISSUED
P23336US03	UNITED STATES	CON	APPARATUS AND METHODS FOR HAPTIC TRAINING OF ROBOTS	15/845,832	12/18/2017	10/717,191	7/21/2020	ISSUED
P23381US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR OBJECT DETECTION VIA OPTICAL FLOW CANCELLATION	13/689,717	11/29/2012	9,193,075	11/24/2015	ISSUED
P23308US02	UNITED STATES	CON	APPARATUS AND METHODS FOR ONLINE TRAINING OF ROBOTS	16/269,129	2/6/2019			ALLOWED
P23289US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR OPERATING ROBOTIC DEVICES USING SELECTIVE STATE SPACE TRAINING	14/070,269	11/1/2013	9,566,710	2/14/2017	ISSUED
P23289US02	UNITED STATES	CON	APPARATUS AND METHODS FOR OPERATING ROBOTIC DEVICES USING SELECTIVE STATE SPACE TRAINING	16/235,250	12/28/2018			PUBLISHED
P23349US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR POLYCHRONOUS ENCODING AND MULTIPLEXING IN NEURONAL PROSTHETIC DEVICES	13/117,048	5/26/2011	9,311,593	4/12/2016	ISSUED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23365US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR PROCESSING INPUTS IN AN ARTIFICIAL NEURON NETWORK	13/922,116	6/19/2013	9,239,985	1/19/2016	ISSUED
P23328US01	UNITED STATES	FCA	APPARATUS AND METHODS FOR PROGRAMMING AND TRAINING OF ROBOTIC DEVICES	14/613,237	2/3/2015	10,105,841	10/23/2018	ISSUED
P23328US02	UNITED STATES	CON	APPARATUS AND METHODS FOR PROGRAMMING AND TRAINING OF ROBOTIC DEVICES	16/131,128	9/14/2018			PUBLISHED
P23338US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR PROGRAMMING AND TRAINING OF ROBOTIC HOUSEHOLD APPLIANCES	14/632,842	2/26/2015	9,717,387	8/1/2017	ISSUED
P23338US01	UNITED STATES	CON	APPARATUS AND METHODS FOR PROGRAMMING AND TRAINING OF ROBOTIC HOUSEHOLD APPLIANCES	15/665,146	7/31/2017	10,376,117	8/13/2019	ISSUED
P23338US02	UNITED STATES	CON	APPARATUS AND METHODS FOR PROGRAMMING AND TRAINING OF ROBOTIC HOUSEHOLD APPLIANCES	16/454,199	6/27/2019			PUBLISHED
P23347US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR PULSE-CODE INVARIANT OBJECT RECOGNITION	13/152,084	6/2/2011	9,405,975	8/2/2016	ISSUED
P23290US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR REAL TIME ESTIMATION OF DIFFERENTIAL MOTION IN LIVE VIDEO	14/285,385	5/22/2014	10,194,163	1/29/2019	ISSUED
P23290US01	UNITED STATES	CON	APPARATUS AND METHODS FOR REAL TIME ESTIMATION OF DIFFERENTIAL MOTION IN LIVE VIDEO	16/210,370	12/5/2018	10/728,570	7/28/2020	ISSUED
P23303US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR REINFORCEMENT- GUIDED SUPERVISED LEARNING	13/866,975	4/19/2013	9,008,840	4/14/2015	ISSUED
P23283US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR REINFORCEMENT LEARNING IN ARTIFICIAL NEURAL NETWORKS	13/489,280	6/5/2012	8,943,008	1/27/2015	ISSUED
P23374US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR REMOTELY CONTROLLING ROBOTIC DEVICES	14/489,242	9/17/2014	9,849,588	12/26/2017	ISSUED
P23377US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR REMOVAL OF LEARNED BEHAVIORS IN ROBOTS	14/489,373	9/17/2014	9,579,790	2/28/2017	ISSUED
P23339US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR SAFE NAVIGATION OF ROBOTIC DEVICES	14/749,423	6/24/2015	9,840,003	12/12/2017	ISSUED
P23379US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR SALIENCY DETECTION BASED ON COLOR OCCURRENCE ANALYSIS	14/637,191	3/3/2015	9,870,617	1/16/2018	ISSUED
P23379US01	UNITED STATES	CON	APPARATUS AND METHODS FOR SALIENCY DETECTION BASED ON COLOR OCCURRENCE ANALYSIS	15/871,862	1/15/2018	10,810,456	10/20/2020	ISSUED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23298US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR STATE-DEPENDENT LEARNING IN SPIKING NEURON NETWORKS	13/722,769	12/20/2012	8,990,133	3/24/2015	ISSUED
P23404US00	UNITED STATES	NEW	APPARATUS AND METHODS FOR TEMPORAL PROXIMITY DETECTION	14/191,383	2/26/2014	9,373,038	6/21/2016	ISSUED
P23404US01	UNITED STATES	CON	APPARATUS AND METHODS FOR TEMPORAL PROXIMITY DETECTION	15/187,533	6/20/2016	11,042,775	6/22/2021	ISSUED
P23304US01	UNITED STATES	FCA	APPARATUS AND METHODS FOR TRACKING SALIENT FEATURES	14/637,164	3/3/2015	10,032,280	7/24/2018	ISSUED
P23304US02	UNITED STATES	CON	APPARATUS AND METHODS FOR TRACKING SALIENT FEATURES	16/042,901	7/23/2018	10,860,882	12/8/2020	ISSUED
P23328US10	UNITED STATES	FCA	APPARATUS AND METHODS FOR TRAINING OF ROBOTS	14/588,168	12/31/2014	9,687,984	6/27/2017	ISSUED
P23328US07	UNITED STATES	FCA	APPARATUS AND METHODS FOR TRAINING PATH NAVIGATION BY ROBOTS	14/607,018	1/27/2015	9,604,359	3/28/2017	ISSUED
P23328US08	UNITED STATES	CON	APPARATUS AND METHODS FOR TRAINING PATH NAVIGATION BY ROBOTS	15/470,629	3/27/2017	9,902,062	2/27/2018	ISSUED
P23328US09	UNITED STATES	CON	APPARATUS AND METHODS FOR TRAINING PATH NAVIGATION BY ROBOTS	15/901,777	2/21/2018	10/293,483	5/21/2019	ISSUED
P23328US04	UNITED STATES	CON	APPARATUS AND METHODS OF HIERARCHICAL TRAINING OF ROBOTS	16/031,950	7/10/2018			PUBLISHED
P23321US06	UNITED STATES	FCA	AUTONOMOUS MULTI-TASKING MODULAR ROBOTIC SYSTEM	16/271,234	2/8/2019			PUBLISHED
P23350US00	UNITED STATES	NEW	BISTATIC OBJECT DETECTION APPARATUS AND METHODS	13/238,932	9/21/2011	9,156,165	10/13/2015	ISSUED
P23339US01	UNITED STATES	DIV	BISTATIC OBJECT DETECTION APPARATUS AND METHODS	14/752,688	6/26/2015	9,873,196	1/23/2018	ISSUED
P23339US02	UNITED STATES	CON	BISTATIC OBJECT DETECTION APPARATUS AND METHODS	15/877,243	1/22/2018	10,807,230	10/20/2020	ISSUED
P23358US00	UNITED STATES	NEW	CONDITIONAL PLASTICITY SPIKING NEURON NETWORK APPARATUS AND METHODS	13/541,531	7/3/2012	9,111,215	8/18/2015	ISSUED
P23362US00	UNITED STATES	NEW	CONTRAST ENHANCEMENT SPIKING NEURON NETWORK SENSORY PROCESSING APPARATUS AND METHODS	13/710,042	12/10/2012	9,123,127	9/1/2015	ISSUED
P23411US00	UNITED STATES	NEW	DISCREPANCY DETECTION APPARATUS AND METHODS FOR MACHINE LEARNING	14/088,258	11/22/2013	9,248,569	2/2/2016	ISSUED
P23302US00	UNITED STATES	NEW	DYNAMICALLY RECONFIGURABLE STOCHASTIC LEARNING APPARATUS AND METHODS	13/487,576	6/4/2012	9,015,092	4/21/2015	ISSUED
P23328US06	UNITED STATES	CON	FEATURE DETECTION APPARATUS AND METHODS FOR TRAINING OF ROBOTIC NAVIGATION	15/495,804	4/24/2017			PUBLISHED
P23334US00	UNITED STATES	NEW	HIERARCHICAL ROBOTIC CONTROLLER APPARATUS AND METHODS	13/918,298	6/14/2013	9,792,546	10/17/2017	ISSUED
P23334US01	UNITED STATES	CON	HIERARCHICAL ROBOTIC CONTROLLER APPARATUS AND METHODS	15/785,161	10/16/2017			PUBLISHED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23376US00	UNITED STATES	NEW	HOME ANIMATION APPARATUS AND METHODS	14/489,353	9/17/2014	9,860,077	1/2/2018	ISSUED
P23285US02	UNITED STATES	DIV	INTERFACE FOR USE WITH TRAINABLE MODULAR ROBOTIC APPARATUS	14/958,825	12/3/2015	9,862,092	1/9/2018	ISSUED
P23297US02	UNITED STATES	CON	INVARIANT PULSE LATENCY CODING SYSTEMS AND METHODS	13/895,246	5/15/2013	8,983,216	3/17/2015	ISSUED
P23297US01	UNITED STATES	FCA	INVARIANT PULSE LATENCY CODING SYSTEMS AND METHODS SYSTEMS AND METHODS	12/869,583	8/26/2010	8,467,623	6/18/2013	ISSUED
P23287US03	UNITED STATES	CON	METHODS AND APPARATUS FOR TRACKING OBJECTS USING SALIENCY	16/291,470	3/4/2019	10,657,409	5/19/2020	ISSUED
P23360US00	UNITED STATES	NEW	MODULATED PLASTICITY APPARATUS AND METHODS FOR SPIKING NEURON NETWORK	13/660,945	10/25/2012	9,111,226	8/18/2015	ISSUED
P23393US00	UNITED STATES	NEW	MODULATED STOCHASTICITY SPIKING NEURON NETWORK CONTROLLER APPARATUS AND METHODS	13/623,801	9/20/2012	9,189,730	11/17/2015	ISSUED
P23324US00	UNITED STATES	NEW	MULTITHREADED APPARATUS AND METHODS FOR IMPLEMENTING PARALLEL NETWORKS	13/895,163	5/15/2013	9,390,369	7/12/2016	ISSUED
P23355US01	UNITED STATES	FCA	NEURAL NETWORK LEARNING AND COLLABORATION APPARATUS AND METHODS	13/830,398	3/14/2013	9,208,432	12/8/2015	ISSUED
P23333US00	UNITED STATES	NEW	OPTICAL DETECTION APPARATUS AND METHODS	14/321,736	7/1/2014	9,848,112	12/19/2017	ISSUED
P23333US01	UNITED STATES	CON	OPTICAL DETECTION APPARATUS AND METHODS	15/845,891	12/18/2017	10/728,436	7/28/2020	ISSUED
P23328US12	UNITED STATES	FCA	PERSISTENT PREDICTOR APPARATUS AND METHODS FOR TASK SWITCHING	14/705,487	5/6/2015	10,131,052	11/20/2018	ISSUED
P23328US13	UNITED STATES	CON	PERSISTENT PREDICTOR APPARATUS AND METHODS FOR TASK SWITCHING	16/150,609	10/3/2018			PUBLISHED
P23281US00	UNITED STATES	NEW	PREDICTIVE ROBOTIC CONTROLLER APPARATUS AND METHODS	13/918,620	6/14/2013	9,314,924	4/19/2016	ISSUED
P23281US01	UNITED STATES	CON	PREDICTIVE ROBOTIC CONTROLLER APPARATUS AND METHODS	15/132,003	4/18/2016	9,950,426	4/24/2018	ISSUED
P23281US02	UNITED STATES	CON	PREDICTIVE ROBOTIC CONTROLLER APPARATUS AND METHODS	15/960,300	4/23/2018	10,369,694	8/6/2019	ISSUED
P23281US03	UNITED STATES	CON	PREDICTIVE ROBOTIC CONTROLLER APPARATUS AND METHODS	16/447,261	6/20/2019			PUBLISHED
P23391US00	UNITED STATES	NEW	PROPORTIONAL-INTEGRAL-DERIVATIVE CONTROLLER EFFECTING EXPANSION KERNELS COMPRISING A PLURALITY OF SPIKING NEURONS ASSOCIATED WITH A PLURALITY OF RECEPTIVE FIELDS	13/656,987	10/22/2012	9,082,079	7/14/2015	ISSUED
P23361US00	UNITED STATES	NEW	RATE STABILIZATION THROUGH PLASTICITY IN SPIKING NEURON NETWORK	13/691,554	11/30/2012	9,275,326	3/1/2016	ISSUED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23330US01	UNITED STATES	CON	REDUCED DEGREE OF FREEDOM ROBOTIC CONTROLLER APPARATUS AND METHODS	15/967,240	4/30/2018	10,507,580	12/17/2019	ISSUED
P23330US03	UNITED STATES	CON	REDUCED DEGREE OF FREEDOM ROBOTIC CONTROLLER APPARATUS AND METHODS	16/682,430	11/13/2019			PUBLISHED
P23410US00	UNITED STATES	NEW	ROBOTIC CONTROL ARBITRATION APPARATUS AND METHODS	14/040,498	9/27/2013	9,296,101	3/29/2016	ISSUED
P23389US00	UNITED STATES	NEW	ROBOTIC LEARNING AND EVOLUTION APPARATUS	13/623,826	9/20/2012	8,793,205	7/29/2014	ISSUED
P23299US00	UNITED STATES	NEW	ROBOTIC TRAINING APPARATUS AND METHODS	13/841,980	3/15/2013	8,996,177	3/31/2015	ISSUED
P23307US00	UNITED STATES	NEW	ROBOTIC TRAINING APPARATUS AND METHODS	13/918,338	6/14/2013	9,384,443	7/5/2016	ISSUED
P23287US02	UNITED STATES	FCA	SALIENT FEATURES TRACKING APPARATUS AND METHODS USING VISUAL INITIALIZATION	14/637,138	3/3/2015	10,055,850	8/21/2018	ISSUED
P23284US00	UNITED STATES	NEW	SENSORY INPUT PROCESSING APPARATUS AND METHODS	13/152,119	6/2/2011	8,942,466	1/27/2015	ISSUED
P23353US00	UNITED STATES	NEW	SENSORY INPUT PROCESSING APPARATUS IN A SPIKING NEURAL NETWORK	13/465,903	5/7/2012	9,224,090	12/26/2015	ISSUED
P23301US01	UNITED STATES	CON	SENSORY PROCESSING APPARATUS AND METHODS	13/540,429	7/2/2012	9,014,416	4/21/2015	ISSUED
P23398US00	UNITED STATES	NEW	SPIKING NEURON CLASSIFIER APPARATUS AND METHODS USING CONDITIONALLY INDEPENDENT SUBSETS	13/756,372	1/31/2013	9,195,934	11/24/2015	ISSUED
P23392US00	UNITED STATES	NEW	SPIKING NEURON NETWORK ADAPTIVE CONTROL APPARATUS AND METHODS	13/623,842	9/20/2012	9,367,798	6/14/2016	ISSUED
P23356US00	UNITED STATES	NEW	SPIKING NEURON NETWORK APPARATUS AND METHODS	13/488,106	6/4/2012	9,098,811	8/4/2015	ISSUED
P23394US00	UNITED STATES	NEW	SPIKING NEURON NETWORK APPARATUS AND METHODS FOR ENCODING OF SENSORY DATA	13/623,838	9/20/2012	9,311,594	4/12/2016	ISSUED
P23296US00	UNITED STATES	NEW	SPIKING NEURON NETWORK SENSORY PROCESSING APPARATUS AND METHODS	13/548,071	7/12/2012	8,977,582	3/10/2015	ISSUED
P23371US00	UNITED STATES	NEW	SPIKING NEURON SENSORY PROCESSING APPARATUS AND METHODS FOR SALIENCY DETECTION	13/660,982	10/25/2012	9218563	12/22/2015	ISSUED
P23413US00	UNITED STATES	NEW	SPOOFING REMOTE CONTROL APPARATUS AND METHODS	14/244,892	4/3/2014	9,613,308	4/4/2017	ISSUED
P23384US00	UNITED STATES	NEW	STOCHASTIC APPARATUS AND METHODS FOR IMPLEMENTING GENERALIZED LEARNING RULES	13/487,499	6/4/2012	9104186	8/11/2015	ISSUED
P23417US01	UNITED STATES	DCA	SYSTEM AND METHOD FOR MOTION CONTROL OF ROBOTS	16/679,548	9/11/2019			PUBLISHED
P23294US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ASSISTING A ROBOTIC APPARATUS	15/423,442	2/2/2017	10,377,040	8/13/2019	ISSUED
P23294US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR ASSISTING A ROBOTIC APPARATUS	16/454,695	6/27/2019			PUBLISHED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23279US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	15/179,851	6/10/2016	9,987,752	6/5/2018	ISSUED
P23279US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	15/997,397	6/4/2018	10,464,213	11/5/2019	ISSUED
P23279US02	UNITED STATES	CON	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	16/582,302	9/25/2019	10,967,519	4/6/2021	ISSUED
P23421US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR CLOUD EDGE TASK PERFORMANCE AND COMPUTING USING ROBOTS	17/231,566	4/15/2021			PUBLISHED
P24579US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR CONFIGURING A ROBOT TO SCAN FOR FEATURES WITHIN AN ENVIRONMENT	63/191,719	5/21/2021			PENDING
P23317US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR DETECTING BLIND SPOTS FOR ROBOTS	17/199,721	3/12/2021			PUBLISHED
P24576US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR DETECTING ERRONEOUS RANGE SENSOR MEASUREMENTS	63/182,198	4/30/2021			PENDING
P24452US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR DETECTING FLOOR FROM NOISY DEPTH MEASUREMENTS FOR ROBOTS	63/127,611	12/18/2020			PENDING
P24402US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR DETECTING MOUNTING ERRORS OF A CLIFF DETECTION SENSOR	63/088,583	10/7/2020			PENDING
P24179US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR DETECTION OF FEATURES WITHIN DATA COLLECTED BY A PLURALITY OF ROBOTS BY A CENTRALIZED SERVER	17/145,908	1/11/2021			PUBLISHED
P24222US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR DETERMINING A POSE OF A SENSOR ON A ROBOT	17/206,940	3/19/2021			PENDING
P23293US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	15/341,612	11/2/2016	10,001,780	6/19/2018	ISSUED
P23293US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	16/011,499	6/18/2018	10,379,539	8/13/2019	ISSUED
P24610US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR EDITING ROUTES FOR ROBOTIC DEVICES	63/222,593	7/16/2021			PENDING
P24263US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR ENHANCING PERFORMANCE AND MAPPING OF ROBOTS USING MODULAR DEVICES	17/313,077	5/6/2021			PENDING
P24429US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR FILTERING UNDERESTIMATED DISTANCE MEASUREMENTS FROM PERIODIC PULSE-MODULATED TIME-OF-FLIGHT SENSORS	63/117,125	11/23/2020			PENDING

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P233460US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR IMPROVED CONTROL OF NONHOLONOMIC ROBOTIC SYSTEMS	17/346,386	6/14/2021			PENDING
P23318US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED ROUTE	15/152,436	5/11/2016	10,241,514	3/26/2019	ISSUED
P23318US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED ROUTE	16/268,861	2/6/2019			PENDING
P23297US03	UNITED STATES	FCA	SYSTEMS AND METHODS FOR INVARIANT PULSE LATENCY CODING	12/869,573	8/26/2010	8,315,305	11/20/2012	ISSUED
P23510US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR LASER AND IMAGING ODOMETRY FOR AUTONOMOUS ROBOTS	17/386,001	7/27/2021			PENDING
P23259US02	UNITED STATES	CEQ	SYSTEMS AND METHODS FOR OPERATING AUTONOMOUS TUG ROBOTS	17/140,468	1/4/2021			PUBLISHED
P23266US01	UNITED STATES	CEQ	SYSTEMS AND METHODS FOR OPTIMIZING ROUTE PLANNING FOR TIGHT TURNS FOR ROBOTIC APPARATUSES	17/149,951	1/15/2021			PUBLISHED
P23420US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR PERSISTENT MAPPING OF ENVIRONMENTAL PARAMETERS USING A CENTRALIZED CLOUD SERVER AND A ROBOTIC NETWORK	17/231,613	4/15/2021			PUBLISHED
P23320US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR PRECISE NAVIGATION OF AUTONOMOUS DEVICES	16/260,590	1/29/2019	11,099,575	8/24/2021	ISSUED
P24472US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR PRECISELY ESTIMATING A ROBOTIC FOOTPRINT FOR EXECUTION OF NEAR-COLLISION MOTIONS	63/131,643	12/29/2020			PENDING
P23292US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR PREDICTIVE/RECONSTRUCTIVE VISUAL OBJECT TRACKER	15/627,096	6/19/2017	10/282,849	5/7/2019	ISSUED
P23292US02	UNITED STATES	CON	SYSTEMS AND METHODS FOR PREDICTIVE/RECONSTRUCTIVE VISUAL OBJECT TRACKER	16/357,536	3/19/2019	10,818,016	10/27/2020	ISSUED
P24412US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR PRODUCING OCCUPANCY MAPS FOR ROBOTIC DEVICES	63/093,997	10/20/2020			PENDING
P24237US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR QUANTITATIVELY MEASURING WHEEL SLIPPAGE IN DIFFERENTIAL DRIVE ROBOTS	17,232,481	4/16/2021			PENDING
P23306US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR REMOTE OPERATING AND/OR MONITORING OF A ROBOT	15/362,544	11/28/2016	10/723,018	7/28/2020	ISSUED
P23306US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR REMOTE OPERATING AND/OR MONITORING OF A ROBOT	16/939,779	7/27/2020			PUBLISHED
P23329US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR REROUTING ROBOTS TO AVOID NO-GO ZONES	17/205,692	3/18/2021			PUBLISHED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23319US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	15/199,224	6/30/2016	10,016,896	7/10/2018	ISSUED
P23319US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	16/030,690	7/9/2018			PUBLISHED
P24564US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ROBOTIC DETECTION OF ESCALATORS AND MOVING WALKWAYS	63/174,701	4/14/2021			PENDING
P23291US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	15/340,807	11/1/2016	10,274,325	4/30/2019	ISSUED
P23291US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	16/356,160	3/18/2019	10/823,576	11/3/2020	ISSUED
P23305US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	15/891,202	2/7/2018	10,852,730	12/1/2020	ISSUED
P23311US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	15/474,816	3/30/2017	10,293,485	5/21/2019	ISSUED
P23311US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	16/376,237	4/5/2019	10,899,008	1/26/2021	ISSUED
P23311US02	UNITED STATES	CON	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	17/157,897	1/25/2021			PUBLISHED
P23322US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR ROBUST ROBOTIC MAPPING	15/942,123	3/30/2018			PUBLISHED
P24594US00	UNITED STATES	NEW	SYSTEMS AND METHODS FOR STOPPING ROBOTIC TUGS	63/216,613	6/30/2021			PENDING
P23287US01	UNITED STATES	FCA	SYSTEMS AND METHODS FOR TRACKING OBJECTS USING SALIENCY	14/860,579	9/21/2015	10/268,919	4/23/2019	ISSUED
P23286US01	UNITED STATES	CON	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTONOMOUSLY TRAVEL A ROUTE	16/168,368	10/23/2018			PUBLISHED
P23282US00	UNITED STATES	NEW	SYSTEMS AND METHODS TO OPERATE CONTROLLABLE DEVICES WITH GESTURES AND/OR NOISES	15/143,397	4/29/2016	10,295,972	5/21/2019	ISSUED
P24487US00	UNITED STATES	NEW	SYSTEMS, APPARATUSES AND METHODS FOR IMPROVING FEATURE DETECTION USING ROBOTIC DEVICES AND IMPROVED OPTICAL CODE RECOGNITION	63/143,482	1/29/2021			PENDING
P23275US01	UNITED STATES	CON	SYSTEMS, APPARATUSES AND METHODS FOR REMOVING FALSE POSITIVES FROM SENSOR DETECTION	17/226,471	4/9/2021			PUBLISHED
P23280US01	UNITED STATES	CON	SYSTEMS, APPARATUSES, AND METHODS FOR BIAS DETERMINATION AND VALUE CALCULATION OF PARAMETERS OF A ROBOT	17/176,501	2/16/2021			PUBLISHED
P23458US01	UNITED STATES	CON	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	17/345,407	6/11/2021			PENDING
P23425US01	UNITED STATES	CON	SYSTEMS, APPARATUSES, AND METHODS FOR DYNAMIC FILTERING OF HIGH INTENSITY BROADBAND ELECTROMAGNETIC WAVES FROM IMAGE DATA FROM A SENSOR COUPLED TO A ROBOT	17/242,362	4/28/2021			PENDING

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P24529US00	UNITED STATES	NEW	SYSTEMS, APPARATUSES, AND METHODS FOR ONLINE CALIBRATION OF RANGE SENSORS FOR ROBOTS	63/154,365	2/26/2021			PENDING
P23577US00	UNITED STATES	NEW	SYSTEMS, APPARATUSES, AND METHODS FOR RAPID MACHINE LEARNING FOR FLOOR SEGMENTATION FOR ROBOTIC DEVICES	16/527,292	7/31/2019			PUBLISHED
P23260US01	UNITED STATES	CON	SYSTEMS, METHODS AND APPARATUSES FOR CALIBRATING SENSORS MOUNTED ON A DEVICE	17/142,669	1/6/2021			PUBLISHED
P23260US02	UNITED STATES	CIP	SYSTEMS, METHODS AND APPARATUSES FOR CALIBRATING SENSORS MOUNTED ON A DEVICE	17/216,775	3/30/2021			PUBLISHED
P23364US00	UNITED STATES	NEW	TEMPORAL WINNER TAKES ALL SPIKING NEURON NETWORK SENSORY PROCESSING APPARATUS AND METHODS	13/757,607	2/1/2013	9,070,039	6/30/2015	ISSUED
P23372US00	UNITED STATES	NEW	TRAINABLE CONVOLUTIONAL NETWORK APPARATUS AND METHODS FOR OPERATING A ROBOTIC VEHICLE	14/265,113	4/29/2014	9,346,167	5/24/2016	ISSUED
P23285US01	UNITED STATES	DIV	TRAINABLE MODULAR ROBOTIC APPARATUS	14/946,589	11/19/2015	10,166,675	1/1/2019	ISSUED
P23285US03	UNITED STATES	CON	TRAINABLE MODULAR ROBOTIC APPARATUS	16/199,582	11/26/2018			PUBLISHED
P23332US00	UNITED STATES	NEW	TRAINABLE MODULAR ROBOTIC APPARATUS AND METHODS	14/208,709	3/13/2014	9,987,743	6/5/2018	ISSUED
P23332US01	UNITED STATES	DIV	TRAINABLE MODULAR ROBOTIC APPARATUS AND METHODS	15/474,880	3/30/2017	10,391,628	8/27/2019	ISSUED
P23369US00	UNITED STATES	NEW	TRAINABLE MODULAR ROBOTIC METHODS	14/209,578	3/13/2014	9,364,950	6/14/2016	ISSUED
P23576WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR CALIBRATING NONVISIBLE LIGHT EMITTING SENSORS USING ALIGNMENT TARGETS	PCT/US20/43974	7/29/2020			PUBLISHED
P23421WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR CLOUD EDGE TASK PERFORMANCE AND COMPUTING USING ROBOTS	PCT/US19/56483	10/16/2019			PUBLISHED
P23317WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR DETECTING BLIND SPOTS FOR ROBOTS	PCT/US19/050774	9/12/2019			PUBLISHED
P24283WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR DETECTING GLASS AND SPECULAR SURFACES FOR ROBOTS	PCT/US21/32696	5/17/2021			PENDING
P23570WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR DETECTION OF FEATURES WITHIN DATA COLLECTED BY A PLURALITY OF ROBOTS BY A CENTRALIZED SERVER	PCT/US20/40609	7/2/2020			PUBLISHED
P24229WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR DISINFECTON AND SANITATION OF ENVIRONMENTS BY ROBOTIC DEVICES	PCT/US21/24863	3/30/2021			PENDING

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P24319WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR ENGAGING BRAKES ON A ROBOTIC DEVICE	PCT/US21/41484	7/13/2021			PENDING
P24263WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR ENHANCING PERFORMANCE AND MAPPING OF ROBOTS USING MODULAR DEVICES	PCT/US21/31008	5/6/2021			PENDING
P23460WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR IMPROVED CONTROL OF NONHOLONOMIC ROBOTIC SYSTEMS	PCT/US19/65655	12/11/2019			PUBLISHED
P23510WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR LASER AND IMAGING ODOMETRY FOR AUTONOMOUS ROBOTS	PCT/US20/16070	1/31/2020			PUBLISHED
P23580WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR LOCALIZING DEVICES USING NETWORK SIGNATURES AND COVERAGE MAPS MEASURED BY ROBOTS	PCT/US20/45352	8/7/2020			PUBLISHED
P23522WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR MERGING DISJOINT MAP AND ROUTE DATA WITH RESPECT TO A SINGLE ORIGIN FOR AUTONOMOUS ROBOTS	PCT/US20/20322	2/28/2020			PUBLISHED
P23266WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR OPTIMIZING ROUTE PLANNING FOR TIGHT TURNS FOR ROBOTIC APPARATUSES	PCT/US19/41991	7/16/2019			PUBLISHED
P23420WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR PERSISTENT MAPPING OF ENVIRONMENTAL PARAMETERS USING A CENTRALIZED CLOUD SERVER AND A ROBOTIC NETWORK	PCT/US19/56476	10/16/2019			PUBLISHED
P24332WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR PRESERVING DATA AND HUMAN CONFIDENTIALITY DURING FEATURE IDENTIFICATION BY ROBOTIC DEVICES	PCT/US21/70987	7/27/2021			PENDING
P23329WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR REROUTING ROBOTS TO AVOID NO-GO ZONES	PCT/US19/51835	9/19/2019			PUBLISHED
P24215WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR ROUTE SYNCHRONIZATION FOR ROBOTIC DEVICES	PCT/US21/22125	3/12/2021			PENDING
P23727WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR TRAINING NEURAL NETWORKS ON A CLOUD SERVER USING SENSORY DATA COLLECTED BY ROBOTS	PCT/US20/60731	11/16/2020			PUBLISHED
P24300WO00	WIPO	CEQ	SYSTEMS AND METHODS FOR WIRE DETECTION AND AVOIDANCE FOR ROBOTS	PCT/US21/36302	6/8/2021			PENDING
P23536WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR A DISTRIBUTED ROBOTIC NETWORK OF DATA COLLECTION AND INSIGHT GENERATION	PCT/US20/26314	4/2/2020			PUBLISHED

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23280WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR BIAS DETERMINATION AND VALUE CALCULATION OF PARAMETERS A ROBOT	PCT/US19/46788	8/16/2019			PUBLISHED
P24180WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR CALIBRATING LIDAR SENSORS OF A ROBOT USING INTERSECTING LIDAR SENSORS	PCT/US21/14313	1/21/2021			PUBLISHED
P24315WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR CALIBRATING LIDAR SENSORS OF A ROBOT USING INTERSECTING LIDAR SENSORS	PCT/US21/39688	6/29/2021			PENDING
P23537WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR COST EVALUATION AND MOTION PLANNING FOR ROBOTIC DEVICES	PCT/US20/26320	4/2/2020			PUBLISHED
P23458WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	PCT/US19/65643	12/11/2019			PUBLISHED
P23596WO00	WIPO	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR OPERATING A VARIABLE HEIGHT SWEEPER APPARATUS	PCT/US20/48812	8/31/2020			PUBLISHED
P23260WO00	WIPO	CEQ	SYSTEMS, METHODS AND APPARATUSES FOR CALIBRATING SENSORS MOUNTED ON A DEVICE	PCT/US19/40237	7/2/2019			PUBLISHED
P23305GB01	UNITED KINGDOM	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	18706155.1	2/8/2018	3580626	1/6/2021	ISSUED
P23576TW00	TAIWAN	CEQ	SYSTEMS AND METHODS FOR CALIBRATING NONVISIBLE LIGHT EMITTING SENSORS USING ALIGNMENT TARGETS	109125859	7/30/2020			PUBLISHED
P23460TW00	TAIWAN	CEQ	SYSTEMS AND METHODS FOR IMPROVED CONTROL OF NONHOLONOMIC ROBOTIC SYSTEMS	108145501	12/12/2019			PUBLISHED
P23522TW00	TAIWAN	CEQ	SYSTEMS AND METHODS FOR MERGING DISJOINT MAP AND ROUTE DATA WITH RESPECT TO A SINGLE ORIGIN FOR AUTONOMOUS ROBOTS	109106807	3/2/2020			PUBLISHED
P24237TW00	TAIWAN	CEQ	SYSTEMS AND METHODS FOR QUANTITATIVELY MEASURING WHEEL SLIPPAGE IN DIFFERENTIAL DRIVE ROBOTS	110114008	4/19/2021			PENDING
P23458TW00	TAIWAN	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	108145371	12/11/2019			PUBLISHED
P23596TW00	TAIWAN	CEQ	SYSTEMS, APPARATUSES, AND METHODS FOR OPERATING A VARIABLE HEIGHT SWEEPER APPARATUS	109130296	9/3/2020			PUBLISHED
P23417KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR CONTROL SYSTEM SAFETY OF ROBOTS	1020197036150	5/9/2018			PENDING

IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23293KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	1020197015595	10/31/2017			PENDING
P23318KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED ROUTE	1020187035946	5/11/2017			PENDING
P23266KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR OPTIMIZING ROUTE PLANNING FOR TIGHT TURNS FOR ROBOTIC APPARATUSES	2021-7004518	7/16/2019			PENDING
P23319KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	1020197001472	6/30/2017			PENDING
P23291KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	1020197015593	10/31/2017			PENDING
P23286KR00	SOUTH KOREA	DCA	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTOMOMOUSLY TRAVEL A ROUTE	1020187035942	5/11/2017			PENDING
P23458KR00	SOUTH KOREA	DCA	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	2021-7021410	12/11/2019			PENDING
P23305SG01	SINGAPORE	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	112019073685	2/8/2018			PENDING
P23305SA01	SAUDI ARABIA	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	519402461	2/8/2018			PENDING
P23305QA01	QATAR	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	QA20190800431	2/8/2018			PENDING
P23305KW01	KUWAIT	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	KWP2019000276	2/8/2018			PENDING
P23288JP00	JAPAN	DCA	APPARATUS AND METHODS FOR DETECTION OF OBJECTS USING BROADBAND SIGNALS	2018523358	7/19/2016	6773781	10/5/2020	ISSUED
P23294JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR ASSISTING A ROBOTIC APPARATUS	2019541747	2/2/2018			PENDING
P23279JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	2019516920	6/9/2017			PENDING
P23417JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR CONTROL SYSTEM SAFETY OF ROBOTS	2019561845	5/9/2018			PENDING
P23317JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR DETECTING BLIND SPOTS FOR ROBOTS	JP2021-514048	9/12/2019			PENDING
P23293JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	2019523827	10/31/2017			PUBLISHED
P23460JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR IMPROVED CONTROL OF NONHOLONOMIC ROBOTIC SYSTEMS	2021-533844	12/11/2019			PENDING
P23318JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED ROUTE	2019511832	5/11/2017			PUBLISHED
P23306JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR REMOTE OPERATING AND/OR MONITORING OF A ROBOT	2019527413	11/28/2017			PUBLISHED



IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23329JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR REROUTING ROBOTS TO AVOID NO-GO ZONES	JP2021-515581	9/19/2019			PENDING
P23319JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	2018567170	6/30/2017			PENDING
P23291JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	2019523542	10/31/2017			PENDING
P23305JP01	JAPAN	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	2019543045	2/8/2018			PENDING
P23311JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	2019553292	3/26/2018			PENDING
P23286JP00	JAPAN	DCA	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTONOMOUSLY TRAVEL A ROUTE	2019511831	5/11/2017			PENDING
P23458JP00	JAPAN	DCA	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	2021533466	12/11/2019			PENDING
P23293HK00	HONG KONG	CEQ	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	62020001513.4	1/15/2020			PUBLISHED
P23319HK00	HONG KONG	CEQ	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	19130358.5	9/30/2019			PUBLISHED
P23291HK00	HONG KONG	CEQ	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	62020001498.8	1/15/2020			PUBLISHED
P23286HK00	HONG KONG	CEQ	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTONOMOUSLY TRAVEL A ROUTE	19128908.1	8/29/2019			PUBLISHED
P23305DE01	GERMANY	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	602018011630.3	2/8/2018	3580626	1/6/2021	ISSUED
P23305FR01	FRANCE	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	18706155.1	2/8/2018	3580626	1/6/2021	ISSUED
P23288EP00	EUROPEAN PATENT CONVENT	DCA	APPARATUS AND METHODS FOR DETECTION OF OBJECTS USING BROADBAND SIGNALS	16828414.9	7/19/2016			PUBLISHED
P23294EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR ASSISTING A ROBOTIC APPARATUS	18706048.8	2/2/2018			PUBLISHED
P23279EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	17811081.3	6/9/2017			PUBLISHED
P23421EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR CLOUD EDGE TASK PERFORMANCE AND COMPUTING USING ROBOTS	19873811.4	10/16/2019			PENDING
P23417EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR CONTROL SYSTEM SAFETY OF ROBOTS	18728286.8	5/9/2018			PUBLISHED
P23317EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR DETECTING BLIND SPOTS FOR ROBOTS	19858731.3	9/12/2019			PUBLISHED
P23293EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	17867114.5	10/31/2017			PUBLISHED
P23318EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED RO	17796891.4	5/11/2017			PUBLISHED





IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23510EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR LASER AND IMAGING ODOMETRY FOR AUTONOMOUS ROBOTS	20748214.2	1/31/2020			PENDING
P23259EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR OPERATING AUTONOMOUS TUG ROBOTS	19831318.1	7/2/2019			PUBLISHED
P23266EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR OPTIMIZING ROUTE PLANNING FOR TIGHT TURNS FOR ROBOTIC APPARATUSES	19837252.6	7/16/2019			PUBLISHED
P23420EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR PERSISTENT MAPPING OF ENVIRONMENTAL PARAMETERS USING A CENTRALIZED CLOUD SERVER AND A ROBOTIC NETWORK	19872877.6	10/16/2019			PUBLISHED
P23306EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR REMOTE OPERATING AND/OR MONITORING OF A ROBOT	17875006.3	11/28/2017			PUBLISHED
P23329EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR REROUTING ROBOTS TO AVOID NO-GO ZONES	19862719.2	9/19/2019			PUBLISHED
P23319EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	17821370.8	6/30/2017			PUBLISHED
P23291EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	17868024.5	10/31/2017			PUBLISHED
P23305EP01	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	18706155.1	2/8/2018	3580626	1/6/2021	ISSUED
P23311EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	18718982.4	3/26/2018			PUBLISHED
P23286EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTONOMOUSLY TRAVEL A ROUTE	17796888.0	5/11/2017			PENDING
P23458EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS, APPARATUSES, AND METHODS FOR DETECTING ESCALATORS	19894540.4	12/11/2019			PENDING
P23260EP00	EUROPEAN PATENT CONVENT	DCA	SYSTEMS, METHODS AND APPARATUSES FOR CALIBRATING SENSORS MOUNTED ON A DEVICE	19831415.5	7/2/2019			PUBLISHED
P23294CN00	CHINA	DCA	SYSTEMS AND METHODS FOR ASSISTING A ROBOTIC APPARATUS	201880019765.6	2/2/2018			PUBLISHED
P23417CN00	CHINA	DCA	SYSTEMS AND METHODS FOR CONTROL SYSTEM SAFETY OF ROBOTS	201880044427.8	5/9/2018			PUBLISHED
P23293CN00	CHINA	DCA	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	201780074759.6	10/31/2017			PUBLISHED
P23318CN00	CHINA	DCA	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED RO	201780041844.2	5/11/2017			PUBLISHED




IP Docket No.	Country	New/Con	Title	Application No.	Application Date	Patent No.	Issue Date	Status
P23266CN00	CHINA	DCA	SYSTEMS AND METHODS FOR OPTIMIZING ROUTE PLANNING FOR TIGHT TURNS FOR ROBOTIC APPARATUSES	201980059154.9	7/16/2019			PUBLISHED
P23319CN00	CHINA	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	201780049815.0	6/30/2017			PUBLISHED
P23319CN00	CHINA	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	201780049815.0	6/30/2017			PUBLISHED
P23291CN00	CHINA	DCA	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	201780074773.6	10/31/2017			PUBLISHED
P23305CN01	CHINA	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	201880021717.0	2/8/2018			PUBLISHED
P23311CN00	CHINA	DCA	SYSTEMS AND METHODS FOR ROBOTIC PATH PLANNING	201880028942.7	3/26/2018			PUBLISHED
P23286CN00	CHINA	DCA	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTOMOMOUSLY TRAVEL A ROUTE	201780041655.5	5/11/2017			PUBLISHED
P23260CN00	CHINA	DCA	SYSTEMS, METHODS AND APPARATUSES FOR CALIBRATING SENSORS MOUNTED ON A DEVICE	201980057665.7	7/2/2019			PUBLISHED
P23279CA00	CANADA	DCA	SYSTEMS AND METHODS FOR AUTOMATIC DETECTION OF SPILLS	3026806	6/9/2017			PENDING
P23417CA00	CANADA	DCA	SYSTEMS AND METHODS FOR CONTROL SYSTEM SAFETY OF ROBOTS	3063206	5/9/2018			PENDING
P23293CA00	CANADA	DCA	SYSTEMS AND METHODS FOR DYNAMIC ROUTE PLANNING IN AUTONOMOUS NAVIGATION	3042532	10/31/2017			PENDING
P23318CA00	CANADA	DCA	SYSTEMS AND METHODS FOR INITIALIZING A ROBOT TO AUTONOMOUSLY TRAVEL A TRAINED ROUTE	3023557	5/11/2017			PENDING
P23319CA00	CANADA	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	3028451	6/30/2017			PENDING
P23319CA00	CANADA	DCA	SYSTEMS AND METHODS FOR ROBOTIC BEHAVIOR AROUND MOVING BODIES	3028451	6/30/2017			PENDING
P23291CA00	CANADA	DCA	SYSTEMS AND METHODS FOR ROBOTIC MAPPING	3042531	10/31/2017			PENDING
P23286CA00	CANADA	DCA	SYSTEMS AND METHODS FOR TRAINING A ROBOT TO AUTOMOMOUSLY TRAVEL A ROUTE	3023552	5/11/2017			PENDING
P23305BH01	BAHRAIN	DCA	SYSTEMS AND METHODS FOR ROBOTIC MOBILE PLATFORMS	20190192	2/8/2018			PENDING




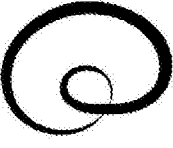
EXHIBIT C




Trademarks





HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
2866.TM4861US00 United States	AUTODELIVERY Class: 12 Registration No. 5974326 - Supplemental Register Registration Date: January 28, 2020	REGISTERED
2866.TM3662US09 United States	EMMA Class: 9 Registration No. 5292420 Registration Date: September 19, 2017	REGISTERED
2866. TM5298US00 United States	BRAIN (Stylized) brain Classes: 7, 12, 42 Application No. 90100866 Application Date: August 7, 2020	PUBLISHED
2866.TM3665US00 United States	BRAINOS Classes: 9 and 42 Registration No. 4716660 Registration Date: April 7, 2015	REGISTERED
2866.TM3665US00A United States	BRAINOS Classes: 9 and 42	UNFILED
2866.TM3673US07 United States	Design Only (Brain Logo) Classes: 7 Registration No. 4956266 Registration Date: May 10, 2016 	REGISTERED
2866.TM3673US09 United States	Design Only (Brain Logo) Classes: 9 Registration No. 4736818 Registration Date: May 12, 2015 	REGISTERED
2866.TM4360US00 United States	Design Only (Brain Swirl) Classes: 7, 9, 42 Registration No. 5855331 Registration Date: September 10, 2019	REGISTERED



HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
		
n/a Worldwide	BRAIN CORP & Design 	Common law, unregistered
2866.TM3665AUWO Australia (extension of IR)	BRAINOS Classes: 9, 42 Application No. 1907760 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM4360AUWO Australia (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Local Registration No. 2014132 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 	REGISTERED
2866.TM4131BX00 Benelux	BRAIN Classes: 9, 42 Registration No. 941210 Registration Date: July 10, 2013	REGISTERED
2866.TM4130BX00 Benelux	BRAIN CORPORATION & Design Classes: 9, 42 Registration No. 948511 Registration Date: February 26, 2014 	REGISTERED
2866.TM3665CA00 Canada	BRAINOS Classes: 9, 42 Application No. 1925716 Application Date: October 17, 2018	PENDING
2866.TM4360CA00 Canada	Design Only (Brain Swirl) Classes: 7, 9, 42 Application No. 1959861 Application Date: April 29, 2019	PENDING





HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
		
2866.TM4991CN09 China	BrainOS Powered Class: 9 Registration No: 42867835 Registration Date: August 7, 2020	REGISTERED
2866.TM4126CN00 China	BSTEM Class: 9 Registration No. 14149985 Registration Date: April 21, 2015	REGISTERED
2866.TM3673CN00 China	Design Only (Brain Logo) Class: 9 Registration No. 14166461 Registration Date: June 7, 2015 	REGISTERED
2866.TM4360CNWO China (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: July 24, 2019 	REGISTERED
2866.TM3665CNWO China (extension of IR)	BRAINOS Class: 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED (awaiting Statement of Grant of Protection from WIPO)
2866.TM3665EUWO European Union(extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM4360EUWO European Union(extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: November 8, 2019	REGISTERED



HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
		
2866.TM4126EU00 European Union	BSTEM Class: 9 Registration No. 12639738 Registration Date: July 18, 2014	REGISTERED
2866.TM3673EU00 European Union	Design Only (Brain Logo) Classes: 7, 9, 12 Registration No. 12685129 Registration Date: November 3, 2014 	REGISTERED
2866.TM4360INWO India (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 Local Registration No. 4198983 International Registration Date: April 12, 2019 	REGISTERED
2866.TM3665INWO India (extension of IR)	BRAINOS Classes: 9 and 42 Local Registration No. 3924216 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: March 14, 2019	REGISTERED
2866.TM3665IDWO Indonesia (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM4360IDWO Indonesia (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: April 24, 2020 	REGISTERED

HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
2866.TM3665WO00 International Registration (designating AU, CH, CN, EU, ID, IN, JP, KR, MX, PH, SG, TH, TR,UK, VN)	BRAINOS Classes: 1 and 42 International Registration No. 1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM4360WO00 International Registration (designating AU, CH, CN, EU, ID, IN, JP, KR, MX, PH, SG, TH, TR,UK, VN)	Design Only (Brain Swirl) Classes: 7, 9, 42 International Registration No. 1470744 International Registration Date: April 12, 2019 	REGISTERED
2866.TM4360JPWO Japan(extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 	REGISTERED (Class 42 services amended locally)
2866.TM3665JPWO Japan (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: February 22, 2019	REGSITERED
2866.TM3665KRWO Korea, Republic of(extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: May 28, 2019	REGISTERED
2866.TM4360KRWO Korea (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 	PUBLISHED (Class 7 goods and Class 42 services amended locally)
2866.TM3665MXWO09 Mexico (extension of IR)	BRAINOS Class: 9 Local Registration No. 1987384 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: April 4, 2019	REGISTERED
2866.TM3665MXWO42	BRAINOS	REGISTERED

HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
Mexico (extension of IR)	Class: 42 Local Registration No. 1985836 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: March 28, 2019	
2866.TM4360MXWO7 Mexico (extension of IR)	Design Only (Brain Swirl) Class: 7 Local Registration No. 2186761 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: December 11, 2020 	REGISTERED
2866.TM4360MXWO9 Mexico (extension of IR)	Design Only (Brain Swirl) Class: 9 Local Registration No. 2186762 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: December 11, 2020 	REGISTERED
2866.TM4360MXWO42 Mexico(extension of IR)	Design Only (Brain Swirl) Class: 42 Local Registration No. 2186763 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: December 11, 2020 	REGISTERED
2866.TM4360PHWO Philippines (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: April 6, 2020 	REGISTERED

HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
2866.TM3665PHWO Philippines (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: October 21, 2018	CLOSED (instructions to allow registration to lapse received 5/17/2021)
2866.TM3665SGWO Singapore (extension of IR)	BRAINOS Classes: 9 and 42 Local Registration No. 40201816356T Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: March 26, 2019	REGISTERED
2866.TM4360SGWO Singapore (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Local Registration No. 20201912488R Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: August 12, 2020 	REGISTERED
2866.TM4360CHWO Switzerland (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 Local Grant Date: May 8, 2020 	REGISTERED
2866.TM3665CHWO Switzerland (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM3665THWO Thailand (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	PENDING (goods may be listed slightly different locally from other extension countries; awaiting entry of amendments)
2866.TM4360THWO Thailand (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744	PENDING

HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
	International Registration Date: April 12, 2019 	
2866.TM3665TRWO Turkey (extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866.TM4360TRWO Turkey (extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 	REGISTERED
2866.TM4360GBWO United Kingdom(extension of IR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Local Application No. WO0000001470744 Extension of International Registration No. 1470744 International Registration Date: April 12, 2019 Local Grant Date: August 20, 2019 	REGISTERED
2866.TM4360GB00 United Kingdom (created automatically pursuant to Brexit)	Design Only (Brain Swirl) Classes: 7, 9, 42 Registration No. UK00801470744 Registration Date: November 8, 2019 	REGISTERED
2866.TM4126GB00 United Kingdom (automatically cloned pursuant to Brexit)	BSTEM Class: 9 Registration No. UK00912639738Registration Date: July 18, 2014	REGISTERED
2866.TM3673GB00 United Kingdom (automatically cloned pursuant to Brexit)	Design Only (Brain Logo) Classes: 7, 9, 12 Registration No. UK00912685129 Registration Date: November 3, 2014	REGISTERED

HM Ref./Country	MARK Class/Serial or Reg. No./Date	STATUS
		
2866.TM3665GBWO United Kingdom(extension of IR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017	REGISTERED
2866. TM3665GB00 United Kingdom (automatically cloned pursuant to Brexit)	BRAINOS Classes: 9 and 42 Registration No. UK00801389081Registration Date: July 17, 2018	REGISTERED
2866.TM3665VNWO Vietnam (extension ofIR)	BRAINOS Classes: 9 and 42 Extension of International Registration No.1389081 International Registration Date: December 6,2017 Local Grant Date: August 29, 2019	REGISTERED
2866.TM4360VNWO Vietnam (extension ofIR)	Design Only (Brain Swirl) Classes: 7, 9, 42 Extension of International Registration No.1470744 International Registration Date: April 12, 2019 	REGISTERED