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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4781932

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
MUBARAK ALI SEYED IBRAHIM	01/08/2018
JUAN C. GARCIA	12/20/2017
RUSHIN N. SHAH	12/16/2017
NICHOLAS K. TREADGOLD	12/15/2017
JUSTIN J. BRINEGAR	12/14/2017
GAGAN ANEJA	12/14/2017
ALAN QIAN	12/18/2017

RECEIVING PARTY DATA

Name:	APPLE INC.
Street Address:	1 INFINITE LOOP
City:	CUPERTINO
State/Country:	CALIFORNIA
Postal Code:	95014

PROPERTY NUMBERS Total: 1

Property Type	Number
Application Number:	15867480

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: (650)		798-0314	
Email:	katya	.bond@dentons.com	
Correspondent Name:	CHRI	STOPHER EIDE	
Address Line 1:	1530	PAGE MILL ROAD	
Address Line 2:	SUIT	E 200	
Address Line 4: PALC		DALTO, CALIFORNIA 94304	
ATTORNEY DOCKET NUMBER	:	P36009US1/77870000290101	
NAME OF SUBMITTER:		CHRISTOPHER B. EIDE	
SIGNATURE:		/Christopher B. Eide/	
DATE SIGNED:		01/18/2018	

Total Attachments: 8	
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source=P36009US1_Asg#page8.tif	

ASSIGNMENT

This assignment is by:

- Mubarak Ali SEYED IBRAHIM c/o Apple Inc.
 1 Infinite Loop Cupertino, California 95014
- Juan C. GARCIA
 c/o Apple Inc.
 1 Infinite Loop
 Cupertino, California 95014
- Rushin N. SHAH
 2013 Garzoni Pl
 Santa Clara, CA 95054
- 4. Nicholas K. TREADGOLD
 c/o Apple Inc.
 1 Infinite Loop
 Cupertino, California 95014
- Justin J. BRINEGAR
 c/o Apple Inc.
 1 Infinite Loop
 Cupertino, California 95014
- 6. Gagan ANEJAc/o Apple Inc.1 Infinite LoopCupertino, California 95014
- 7. Alan QIAN
 c/o Apple Inc.
 1 Infinite Loop
 Cupertino, California 95014

(referred to in this Assignment as "Assignors"), whose residence or mailing address information is listed above.

This Assignment is to:

Assignee: Apple Inc. Address: 1 Infinite Loop, Cupertino, California 95014 A juristic entity duly organized under and pursuant to the laws of: California

(referred to in this Assignment as "Assignee"), which desires to acquire the entire right, title and interest in, to and under said patent application and the inventions covered thereby.

Assignors have invented certain new and useful inventions in:

NATURAL LANGUAGE UNDERSTANDING USING VOCABULARIES WITH COMPRESSED SERIALIZED TRIES

for which the following non-provisional application has been filed in the United States of America.

Serial No.: 15/867480

Filing Date: January 10, 2018

Dentons US LLP 105280163

> PATENT REEL: 044656 FRAME: 0431

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged,

Assignors hereby sell, assign, transfer and set over, to Assignee, its successors, legal representatives and 1. assigns, the entire right, title and interest in and to the above-mentioned inventions, provisional application and application for letters patent, any and all non-provisionals, divisions, continuations, and continuations-in-part claiming priority thereto or the benefit thereof, substitutions of said applications, and any and all letters patent or patents in the United States of America and all foreign countries or jurisdictions which may be granted therefor and thereon, including, without limitation, any modifications to such letters patent or patents such as through reissue, re-examination or other post-grant proceeding, any and all extensions of said letters patent or patents, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by Assignee (including any right to institute actions and to recover damages for past, present and future infringement), for its own use and the use of its successors, legal representatives and assigns, to the full end of the term or terms for which letters patent or patents may be granted, as fully and entirely as the same would have been held and enjoyed by Assignors, had this sale and assignment not been made.

 $\mathbf{2}$ Assignors represent, warrant and covenant (a) that, at the time of execution and delivery of this agreement, Assignors are the sole and lawful owners of the entire right, title and interest in and to said inventions and said provisional application and application for letters patent, and that the same are unencumbered and that Assignors have good and full right and lawful authority to sell and convey the same in the manner set forth in this agreement, or (b) that Assignors solely and lawfully owned the entire right, title and interest in and to said inventions and said provisional application and application for letters patent, and that the same were unencumbered and that Assignors sold, assigned, transferred and set over to Assignee and its successors, legal representatives and assigns, the entire right, title and interest in and to said inventions and said provisional application and application for letters patent.

3. Assignors shall promptly sign and execute all papers and documents, take all lawful oaths, and do all acts necessary, required or useful for the procurement, maintenance, enforcement, defense or otherwise to secure title thereto to the Assignee, at the sole cost and expense of Assignee, its successors, legal representatives and assigns, in each case including, without limitation, arising from or relating to (a) said inventions, or said provisional application and application for letters patent; (b) any division, continuation, or continuation-in-part claiming priority thereto or the benefit thereof, or any substitution of any such application, or (c) any letters patent or patents for said inventions in any country or jurisdiction, including, without limitation, any modifications to such letters patent or patents such as through any reissue, re-examination or other post-grant proceeding. To be clear, for purposes of this paragraph, "procurement, maintenance, enforcement, defense" shall include, without limitation, any preparation, prosecution, pre-grant proceeding, and post-grant proceeding, whether before a patent office or other administrative body or judicial body with jurisdiction therefor.

Assignors hereby authorize and request the Commissioner of Patents in the United States to issue the above 4. mentioned letters patent of the United States to Assignee as the assignee of said inventions and the letters patent to be issued thereon for the sole use of Assignee, its successors, legal representatives and assigns.

S. "I hereby grant attorneys, all of Dentons US LLP, the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark office for recordation of this document, including the power to insert on this assignment the application number and filing date of said application when known."

In witness whereby, executed by the undersigned on the date(s) opposite the undersigned name(s),

Date:	\mathcal{O}	08	18

Date:

Signature: ____

Juan C. GARCIA

Dentons US LLP 105280163

> PATENT REEL: 044656 FRAME: 0432

For good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged,

1. Assignors hereby sell, assign, transfer and set over, to Assignee, its successors, legal representatives and assigns, the entire right, title and interest in and to the above-mentioned inventions, provisional application and application for letters patent, any and all non-provisionals, divisions, continuations, and continuations-in-part claiming priority thereto or the benefit thereof, substitutions of said applications which may be granted therefor and thereon, including, without limitation, any modifications to such letters patent or patents such as through reissue, re-examination or other post-grant proceeding, any and all extensions of said letters patent or patents, and all rights under the International Convention for the Protection of Industrial Property, the same to be held and enjoyed by Assignee (including any right to institute actions and to recover damages for past, present and future infringement), for its own use and the use of its successors, legal representatives and assigns, to the full end of the term or terms for which letters patent or patents may be granted, as fully and entirely as the same would have been held and enjoyed by Assignors, had this sale and assignment not been made.

2. Assignors represent, warrant and covenant (a) that, at the time of execution and delivery of this agreement, Assignors are the sole and lawful owners of the entire right, title and interest in and to said inventions and said provisional application and application for letters patent, and that the same are unencumbered and that Assignors have good and full right and lawful authority to sell and convey the same in the manner set forth in this agreement, or (b) that Assignors solely and lawfully owned the entire right, title and interest in and to said inventions and said provisional application and application for letters patent, and that the same were unencumbered and that Assignors sold, assigned, transferred and set over to Assignee and its successors, legal representatives and assigns, the entire right, title and interest in and to said inventions and said provisional application and application for letters patent.

3. Assignors shall promptly sign and execute all papers and documents, take all lawful oaths, and do all acts necessary, required or useful for the procurement, maintenance, enforcement, defense or otherwise to secure title thereto to the Assignee, at the sole cost and expense of Assignee, its successors, legal representatives and assigns, in each case including, without limitation, arising from or relating to (a) said inventions, or said provisional application and application for letters patent; (b) any division, continuation, or continuation-in-part claiming priority thereto or the benefit thereof, or any substitution of any such application, or (c) any letters patent or patents for said inventions in any country or jurisdiction, including, without limitation, any modifications to such letters patent or patents such as through any reissue, re-examination or other post-grant proceeding. To be clear, for purposes of this paragraph, "procurement, maintenance, enforcement, defense" shall include, without limitation, any preparation, prosecution, pre-grant proceeding, and post-grant proceeding, whether before a patent office or other administrative body or judicial body with jurisdiction therefor.

4. Assignors hereby authorize and request the Commissioner of Patents in the United States to issue the above mentioned letters patent of the United States to Assignee as the assignee of said inventions and the letters patent to be issued thereon for the sole use of Assignee, its successors, legal representatives and assigns.

5. "I hereby grant attorneys, all of Dentons US LLP, the power to insert on this assignment any further identification which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark office for recordation of this document, including the power to insert on this assignment the application number and filing date of said application when known."

In witness whereby, executed by the undersigned on the date(s) opposite the undersigned name(s).

Signature:

Date: 12/20/2017

Signature: ____

Mubarak Ali SEYED IBRAHIM Juan Ç

Dentons US LLP 105280163

> PATENT REEL: 044656 FRAME: 0433

Date: 12/16/2017	Attorney Dockri No: 36009US1/77870000290101
Date:	Signature:
Date:	Signature:Justin J. BRINEGAR
Date:	Signature:Gagan ANEJA
Date:	Signature:Alan QIAN

Dentons US LLP 105280163

Attorney Docket No.: 36009US1/77870000290101

Date:	Signature:	
Date: 15 Decranber 2017	Rushin N. SHAH Signature:	
Date:	Signature: Justin J. BRINEGAR	
Date:	Signature:Gagan ANEJA	
Date:	Signature:Alan QIAN	

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PATENT REEL: 044656 FRAME: 0435

Date: Signatu	re:
	Rushin N. SHAH
Date: Signatu	re:
	Nicholas K. TREADGOLD
Date: $12/14/2017$ Signatu	re: Justin J. BRINEGAR
Date: Signatu	re: Gagan ANEIA
Date: Signatu	

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Attorney Docket No.: 36009US1/77870000290101

Date:		Signature:	
			Rushin N. SHAH
Date:		Signature:	
	÷		Nicholas K. TREADGOLD
Date:		Signature:	
			Justin J, BRINEGAR
Date:	12/14/18	Signature:	<u> </u>
			Gagan XNEIA
Date:	· · · · · · · · · · · · · · · · · · ·	Signature:	·
			Alan QIAN

PATENT REEL: 044656 FRAME: 0437

Attorney Docket No.: 36009US1/77870000290101

Date:	Signature:	
	Rushin N. SHAH	
Date:	Signature:	
	Nicholas K, TREADGOLD	
Date:	Signature:	
	Justin J. BRINEGAR	
Date:	Signature:	
\$	Gagan ANEJA	
Date: 12/18/2017	Signature: Alar	
	Alan QIAN	

Dentons US LLP 105280163

PATENT REEL: 044656 FRAME: 0438

RECORDED: 01/18/2018