

## PATENT ASSIGNMENT COVER SHEET

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<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
YANG SHI	05/05/2020
YOUNG JOO CHUNG	05/05/2020
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	RAKUTEN, INC.
<b>Street Address:</b>	1-14-1 TAMAGAWA, SETAGAYA-KU
<b>City:</b>	TOKYO
<b>State/Country:</b>	JAPAN
<b>Postal Code:</b>	158-0094
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16869408
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(650)204-5605
<i>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.</i>	
<b>Phone:</b>	650-204-5604
<b>Email:</b>	tina@lessanilaw.com
<b>Correspondent Name:</b>	TINA M. LESSANI
<b>Address Line 1:</b>	LESSANI LAW GROUP, PC
<b>Address Line 2:</b>	163 CYPRESS POINT ROAD
<b>Address Line 4:</b>	HALF MOON BAY, CALIFORNIA 94019
<b>ATTORNEY DOCKET NUMBER:</b>	15084-01253US
<b>NAME OF SUBMITTER:</b>	TINA M. LESSANI
<b>SIGNATURE:</b>	/Tina M. Lessani/
<b>DATE SIGNED:</b>	05/07/2020
<b>Total Attachments: 3</b>	
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source=2020_05_05_15084-01253US_Signed_Assignment#page2.tif	
source=2020_05_05_15084-01253US_Signed_Assignment#page3.tif	

ASSIGNMENT

For good and valuable consideration, the receipt of which is hereby acknowledged, the person(s) named below (referred to as "INVENTOR" whether singular or plural) has sold, assigned, and transferred and does hereby sell, assign, and transfer to **Rakuten, Inc.**, a company incorporated under the Companies Act of Japan, having a place of business at **1-14-1 Tamagawa, Setagaya-ku, Tokyo 158-0094, Japan** ("ASSIGNEE"), for itself and its successors, transferees, and assignees, the following:

1. The entire worldwide right, title, and interest in all inventions and improvements ("SUBJECT MATTER") that are disclosed in the non-provisional application filed under 35 U.S.C. §111(a) and entitled "**EFFICIENT CROSS-MODAL RETRIEVAL VIA DEEP BINARY HASHING AND QUANTIZATION**" ("APPLICATION"), which:

is to be filed herewith

was filed on \_\_\_\_\_  
now bearing U.S. application number \_\_\_\_\_ and

2. The entire worldwide right, title, and interest in and to:  
(a) the APPLICATION; (b) all applications claiming priority from the APPLICATION; (c) all utility, divisional, continuation, substitute, renewal, reissue, and other related applications thereto which have been or may be filed in the United States or elsewhere in the world; (d) all patents (including reissues and re-examinations) which may be granted on the applications set forth in (a), (b), (c) and (d) above; and (e) all right of priority in the APPLICATION, together with all rights to recover damages for infringement of provisional rights.

INVENTOR agrees that ASSIGNEE may apply for and receive patents for SUBJECT MATTER in ASSIGNEE's own name.

INVENTOR agrees to do the following, when requested, and without further consideration, in order to carry out the intent of this Assignment: (1) execute all oaths, assignments, powers of attorney, applications, and other papers necessary or desirable to fully secure to ASSIGNEE the rights, titles and interests herein conveyed; (2) communicate to ASSIGNEE all known facts relating to the SUBJECT MATTER; and (3) generally do all lawful acts that ASSIGNEE shall consider desirable for securing, maintaining, and enforcing worldwide patent protection relating to the SUBJECT MATTER and for vesting in ASSIGNEE the rights, titles, and interests herein conveyed. INVENTOR further agrees to provide any successor, assign, or legal representative of ASSIGNEE with the benefits and assistance provided to ASSIGNEE hereunder.

INVENTOR represents that INVENTOR has the rights, titles, and interests to convey as set forth herein, and covenants with ASSIGNEE that the INVENTOR has not made and will not hereafter make any assignment, grant, mortgage, license, or other agreement affecting the rights, titles, and interests herein conveyed.

INVENTOR grants the attorney of record the power to insert on this Assignment any further identification that 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.

This Assignment may be executed in one or more counterparts, each of which shall be deemed an original and all of which may be taken together as one and the same Assignment.

Name and Signature  
Yang Shi  
Yang Shi

Date of Signature  
05/05/2020

State of California )  
County of \_\_\_\_\_ )

On \_\_\_\_\_ before me, \_\_\_\_\_ personally appeared \_\_\_\_\_, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

\_\_\_\_\_  
Notary Public Signature (Seal)

Name and Signature  
Young Joo Chung

Date of Signature  
\_\_\_\_\_, 2020

State of California )  
County of \_\_\_\_\_ )

On \_\_\_\_\_ before me, \_\_\_\_\_ personally appeared \_\_\_\_\_, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

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WITNESS my hand and official seal.

\_\_\_\_\_  
Notary Public Signature (Seal)

Name and Signature \_\_\_\_\_

Date of Signature \_\_\_\_\_

2020

Yang Shi

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County of \_\_\_\_\_ )

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(Seal)

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Name and Signature \_\_\_\_\_

Date of Signature \_\_\_\_\_

2020

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(Seal)

\_\_\_\_\_  
Notary Public Signature