

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT5260897

<b>SUBMISSION TYPE:</b>	CORRECTIVE ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	Corrective Assignment to correct the ADD THE MIDDLE NAME OF INVENTOR KEREN KOCHAVA BARUCH PREVIOUSLY previously recorded on Reel 047374 Frame 0319. Assignor(s) hereby confirms the THE ASSIGNMENT.
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JIANBAO TAO	10/23/2018
SANTOSH KUMAR KANCHI	10/23/2018
KEREN KOCHAVA BARUCH	11/26/2018
ANTHONY DUANE DUERR	10/23/2018
KUNAL MUKESH CHOLERA	10/29/2018
KUMARESH PATTABIRAMAN	10/24/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	MICROSOFT TECHNOLOGY LICENSING, LLC
<b>Street Address:</b>	ONE MICROSOFT WAY
<b>City:</b>	REDMOND
<b>State/Country:</b>	WASHINGTON
<b>Postal Code:</b>	98052
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16177075
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	
<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>Email:</b>	request@slwip.com
<b>Correspondent Name:</b>	SCHWEGMAN LUNDBERG & WOESSNER P.A.
<b>Address Line 1:</b>	P.O. BOX 2938
<b>Address Line 4:</b>	MINNEAPOLIS, MINNESOTA 55402
<b>ATTORNEY DOCKET NUMBER:</b>	3080.K37US1
<b>NAME OF SUBMITTER:</b>	ROBIN L. MONSEES
<b>SIGNATURE:</b>	/ ROBIN L. MONSEES /
<b>DATE SIGNED:</b>	11/30/2018

**Total Attachments: 14**

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RECORDATION FORM COVER SHEET  
PATENTS ONLY

Atty Ref/Docket No.: 902357-US-NP (3080.K37US1)

Patent and Trademark Office

To the Director of the U.S. Patent and Trademark Office: Please record the attached original documents or copy thereof.

1. Name of conveying party(ies):

Jianbao Tao, Santosh Kumar Kancha, Keren Kochava  
Baruch, Anthony Duane Duerr, Kunal Mukesh Cholera,  
Kumaresh Pattabiraman

Additional name(s) of conveying party(ies) attached?

☐ Yes ☒ No

3. Nature of conveyance:

☐ Assignment

☐ Merger

☐ Security Agreement ☐ Change of Name

☒ Other: Corrective Assignment to add the middle  
name of Inventor Keren Kochava Baruch previously  
recorded incorrectly on Reel/Frame: 047374/0319

Execution Date: October 23, 2018, October 23, 2018,  
November 26, 2018, October 23, 2018, October 29,  
2018, October 24, 2018

2. Name and address of receiving party(ies):

Name: Microsoft Technology Licensing, LLC

Street Address: One Microsoft Way

City: Redmond State: WA Zip: 98052

Country: United States of America

Additional name(s) & address(es) attached? ☐ Yes  
☒ No

4. Application number(s) or patent number(s):

If this document is being filed together with a new application, the execution date of the application is:

A. Patent Application No.(s)

B. Patent No.(s)

Serial No. 16/177,075

Additional numbers attached? ☐ Yes ☒ No

5. Name and address of party to whom correspondence  
concerning document should be mailed:

Name: Marc S. Hanish

Address:

Schwegman Lundberg & Woessner, P.A.  
P.O. Box 2938  
Minneapolis, Minnesota 55402

6. Total number of applications and patents involved: 1

7. Total fee (37 CFR 3.41): \$ 0.00

☐ Enclosed

☐ Authorized to be charged to deposit account  
19-0743

8. Please charge any additional fees or credit any over  
payments to our Deposit Account No.: 19-0743

DO NOT USE THIS SPACE

9. Statement and signature.

To the best of my knowledge and belief, the foregoing information is true and correct and any attached copy is a true copy  
of the original document.

Marc S. Hanish/Reg. No. 42,626

Name of Person Signing



Signature

11/28/18

Date

Total number of pages including cover sheet: 14

Mail documents to be recorded with required cover sheet information to:

Commissioner of Patents and Trademarks

Mail Stop Assignment Recordation Services

P.O. Box 1450

Alexandria, VA 22313-1450

PATENT

REEL: 048172 FRAME: 0634

505169694 10/31/2018

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
Stylesheet Version v1.2

EPAS ID: PAT5216462

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
JIANBAO TAO	10/23/2018
SANTOSH KUMAR KANCHI	10/23/2018
KEREN BARUCH	10/23/2018
ANTHONY DUANE DUERR	10/23/2018
KUNAL MUKESH CHOLERA	10/29/2018
KUMARESH PATTABIRAMAN	10/24/2018
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	MICROSOFT TECHNOLOGY LICENSING, LLC
<b>Street Address:</b>	ONE MICROSOFT WAY
<b>City:</b>	REDMOND
<b>State/Country:</b>	WASHINGTON
<b>Postal Code:</b>	98052
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16177075
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(612)339-3061
<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>	612-373-6900
<b>Email:</b>	USPTO@slwip.com
<b>Correspondent Name:</b>	SCHWEGMAN LUNDBERG & WOESSNER / LINKEDIN
<b>Address Line 1:</b>	PO BOX 2938
<b>Address Line 4:</b>	MINNEAPOLIS, MINNESOTA 55402
<b>ATTORNEY DOCKET NUMBER:</b>	902357-US-NP 3080.K37US1
<b>NAME OF SUBMITTER:</b>	DAWN R. DRAPER
<b>SIGNATURE:</b>	/Dawn R. Draper/
<b>DATE SIGNED:</b>	10/31/2018
<b>Total Attachments: 12</b>	

I Jianbao Tao ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

☒ will be filed. ASSIGNOR hereby authorizes, and requests, ASSIGNEE'S legal representative, Microsoft Technology Licensing, LLC, One Microsoft Way, Redmond, Washington 98052 (ASSIGNEE'S LEGAL REPRESENTATIVES), to insert here in parentheses (filed on \_\_\_\_\_ and given Application No. \_\_\_\_\_ by the following Office \_\_\_\_\_) this APPLICATION's Application No., filing date, and Office, when known;

☐ was filed on \_\_\_\_\_ and was given Application No. \_\_\_\_ by the following Office "\_\_\_\_\_ Patent Office";

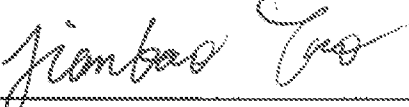
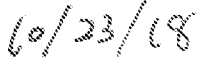
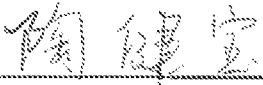
Microsoft Technology Licensing, LLC, a Washington limited liability company, on behalf of itself and its successors and assigns ("ASSIGNEE"), is entitled to, and is desirous of acquiring, the entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

ASSIGNOR hereby authorizes, and requests, ASSIGNEE'S LEGAL REPRESENTATIVES to insert the Application No., filing date, and Office into the following table for any APPLICATION DERIVATIVES after they are known;

Application No.	Filing Date	Office

For good and valuable consideration, the receipt of which is hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns and transfers to the ASSIGNEE, ASSIGNOR's entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

ASSIGNOR agrees to execute all instruments and documents required for the making and prosecution of the APPLICATION (and APPLICATION DERIVATIVES), for litigation regarding letters patent derived therefrom, and for the purpose of protecting and perfecting title to the APPLICATION (and APPLICATION DERIVATIVES).

 _____ Inventor's Signature	 _____ Date
Jianbao Tao _____ Printed Name in English	 _____ Printed Name in Native Language (if other than English)

I Santosh Kumar Kancha ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

☒ will be filed. ASSIGNOR hereby authorizes, and requests, ASSIGNEE'S legal representative, Microsoft Technology Licensing, LLC, One Microsoft Way, Redmond, Washington 98052 (ASSIGNEE'S LEGAL REPRESENTATIVES), to insert here in parentheses (filed on \_\_\_\_\_ and given Application No. \_\_\_\_\_ by the following Office \_\_\_\_\_) this APPLICATION's Application No., filing date, and Office, when known;

☐ was filed on \_\_\_\_\_ and was given Application No. \_\_\_\_ by the following Office "\_\_\_\_\_ Patent Office";


Microsoft Technology Licensing, LLC, a Washington limited liability company, on behalf of itself and its successors and assigns ("ASSIGNEE"), is entitled to, and is desirous of acquiring, the entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

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	<u>10/23/18</u>
Inventor's Signature	Date
Santosh Kumar Kancha	సంకెష్ కుమార్ కంఠ
Printed Name in English	Printed Name in Native Language (if other than English)



I Keren Kochava Baruch ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

☐ will be filed. ASSIGNOR hereby authorizes, and requests, ASSIGNEE'S legal representative, Microsoft Technology Licensing, LLC, One Microsoft Way, Redmond, Washington 98052 (ASSIGNEE'S LEGAL REPRESENTATIVES), to insert here in parentheses (filed on \_\_\_\_\_ and given Application No. \_\_\_\_\_ by the following Office \_\_\_\_\_) this APPLICATION's Application No., filing date, and Office, when known;

☒ was filed on October 31, 2018 and was given Application No 16/177,075 by the following Office "US Patent Office";


Microsoft Technology Licensing, LLC, a Washington limited liability company, on behalf of itself and its successors and assigns ("ASSIGNEE"), is entitled to, and is desirous of acquiring, the entire and exclusive rights, title and interest, including the right of priority, in the INVENTION and the APPLICATION (and all other applications and patents derived therefrom, such as continuing applications, in whole or in part, in and for the United States, its territories, and all foreign countries ("APPLICATION DERIVATIVES"));

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	<u>11/26/18</u>
Inventor's Signature	Date
Keren Kochava Baruch	
Printed Name in English	Printed Name in Native Language (if other than English)

I Anthony Duane Duerr ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

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 _____ Inventor's Signature	23 Oct 2018 _____ Date
Anthony Duane Duerr _____ Printed Name in English	_____ Printed Name in Native Language (if other than English)

I Kunal Mukesh Cholera ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

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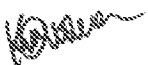
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	10/29/18
Inventor's Signature	Date
Kunal Mukesh Cholera	
Printed Name in English	Printed Name in Native Language (If other than English)

I Kumaresh Pattabiraman ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled "PRECEDENCE-BASED FAST AND SPACE-EFFICIENT RANKING", which:

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<u>P. Kumaresh</u>	<u>10/24/18</u>
Inventor's Signature	Date
<u>Kumaresh Pattabiraman</u>	<u></u>
Printed Name in English	Printed Name in Native Language (if other than English)