503582894 11/24/2015

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT3629522

| SUBMISSION TYPE: | NEW ASSIGNMENT |
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| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|--------------|----------------|
| JIANFENG GAO | 11/20/2015 |
| LI DENG | 11/20/2015 |
| XIAODONG HE | 11/20/2015 |
| LIN XIAO | 11/20/2015 |
| XINYING SONG | 11/20/2015 |
| YELONG SHEN | 11/23/2015 |
| JI HE | 11/21/2015 |
| JIANSHU CHEN | 11/20/2015 |

RECEIVING PARTY DATA

| Name: | MICROSOFT TECHNOLOGY LICENSING, LLC. |
|-----------------------------------|--------------------------------------|
| Street Address: ONE MICROSOFT WAY | |
| City: REDMOND | |
| State/Country: | WASHINGTON |
| Postal Code: | 98052 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 14949156 |

CORRESPONDENCE DATA

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| ATTORNEY DOCKET NUMBER: | MS1-6305US |
|-------------------------|---------------------|
| NAME OF SUBMITTER: | JANETTE ABERNATHY |
| SIGNATURE: | /Janette Abernathy/ |

503582894 PATENT REEL: 037126 FRAME: 0919

| DATE SIGNED: | 11/24/2015 |
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| Total Attachments: 16 | |
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PATENT REEL: 037126 FRAME: 0920

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Attorney Docket No.: MS1- 6305US

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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"));

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| Inventor's Signature | Date | |
| Jianfeng Gao | 高 剑峰 | |
| Printed Name in English | Printed Name in Native Language (if other than English) | |

| Application No. | Filing Date | Office |
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Attorney Docket No.: MS1- 6305US

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| Li Deng | Nov 20, 2015 |
|-------------------------|---------------------------------|
| Inventor's Signature | Date |
| Li Deng | |
| Printed Name in English | Printed Name in Native Language |
| | (if other than English) |

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 | |
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Attorney Docket No.: MS1- 6305US

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| Inventor's Signature | 11/20/2015 |
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| Xiaodong He | 何 晓冬 |
| Printed Name in English | Printed Name in Native Language |
| | (if other than English) |

| PATENT AS | SSIGNMENT | MS Docket No.: Attorney Docket No.: | |
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| or an origina | Lin Xiao Il joint inventor of subject mat lication entitled | ("ASSIGNOR") an ter ("INVENTION") disclo | n the original inventor sed and/or claimed in |
| c | TRAINING AND OPERATING MULT | II-LAYER COMPUTATIONAL | L MODELS |
| ("APPLICATIO |)N"), which: | | |
| | will be filed. ASSIGNOR ASSIGNEE'S legal representa LLC., One Microsoft Way, Red LEGAL REPRESENTATIVES), on November 23, 2015 and githe following Office US – Unit this APPLICATION's Applicat known; | tive, Microsoft Technol Imond, Washington 980 to insert here in pare iven Application No. <u>14/</u> ed States Patent and Tra | iogy Licensing, 52 (ASSIGNEE'S entheses (filed 949,156 by idemark Office) |
| | was filed on | and was given Applicati | on |
| | Noby the f | following Office <u>US – Un</u> | |
| behalf of itse of acquiring, priority, in the derived there | ioft Technology Licensing, LLG If and its successors and assig the entire and exclusive rigite In INVENTION and the APPLICA Ifrom, such as continuing apports of the foreign In its territories, and all foreign | ins ("ASSIGNEE"), is entiti hts, title and interest, i ATION (and all other app plications, in whole or in | led to, and is desirous neluding the right of plications and patents n part, in and for the |

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

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MS Docket No.: 358263.01
Attorney Docket No.: MS1-6305US

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

Lin Xiao

Printed Name in English

Printed Name in Native Language
(if other than English)

PATENT ASSIGNMENT MS Docket No.: 358263.01 Attorney Docket No.: MS1- 6305US Xinying Song ("ASSIGNOR") am the original inventor or an original joint inventor of subject matter ("INVENTION") disclosed and/or claimed in a patent application entitled TRAINING AND OPERATING MULTI-LAYER COMPUTATIONAL MODELS ("APPLICATION"), 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 November 23, 2015 and given Application No. 14/949,156 by the following Office US - United States Patent and Trademark Office) this APPLICATION's Application No., filing date, and Office, when known: was filed on ______ and was given Application

No ______ by the following Office <u>US - United States</u> Patent and Trademark 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 |
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Attorney Docket No.: MS1-6305US

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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).

| ///20/2015 | Inventor's Signature | Date | 文章生 | Printed Name in English | Printed Name in Native Language (if other than English)

| PATENT ASSIGNMENT | MS Docket N | MS Docket No.: | |
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| or an original joint inventor of su a patent application entitled | n ("ASSIGNOR" bject matter ("INVENTION") di: TING MULTI-LAYER COMPUTATIO | sclo | sed and/or claimed in |
| ("APPLICATION"), which: | | *********** | |
| ASSIGNEE'S legal r LLC., One Microsof LEGAL REPRESENT on November 23, 20 the following Office | ASSIGNOR hereby authorize epresentative, Microsoft Techt Way, Redmond, Washington Statistion No. 15 and given Application No. 15 and given Application No. 16 and States Patent and States Patent Application No., filing date, | nnoi 980 pari 14 Tra | logy Licensing, 52 (ASSIGNEE'S entheses (filed /949,156 by Idemark Office) |
| | and was given Appli by the following Office <u>US -</u> ark Office: | | |
| Microsoft Technology Lice behalf of itself and its successors of acquiring, the entire and exc priority, in the INVENTION and the derived therefrom, such as cont United States, its territories, and | lusive rights, title and interested interested and all other inuing applications, in whole the second in the secon | ntit st, i app or i | led to, and is desirous ncluding the right of olications and patents n part, in and for the |
| ASSIGNOR hereby authorize to insert the Application No., fi APPLICATION DERIVATIVES after | | | |
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Page 1 of 2

Attorney Docket No.: MS1-6305US

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| 11/4 | Nov. 21st, 2015 |
|-------------------------|---------------------------------|
| Inventor's Signature | Date |
| Ji He | 何 |
| Printed Name in English | Printed Name in Native Language |
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| PATENT ASSIGNMENT | | MS Docket i | No.: | 358263.01 |
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| | | Attorney Docket 1 | ¥o.: | MS1- 6305US |
| a patent app | al joint inventor of s dication entitled | nen ("ASSIGNOR ubject matter ("INVENTION") d ATING MULTI-LAYER COMPUTATI | isclo | sed and/or claimed ir |
| ("APPLICATIO | DN"), which: | | *************************************** | ······ |
| | ASSIGNEE'S legal LLC., One Microsol LEGAL REPRESENT on November 23, 20 the following Offic | ASSIGNOR hereby authorize representative, Microsoft Tec ft Way, Redmond, Washington ATIVES), to insert here in 15 and given Application No. e US - United States Patent and s Application No., filing date | hnol 980: pare <u>14/</u> <u>i Tra</u> | ogy Licensing, 52 (ASSIGNEE'S entheses (filed 949,156 by demark Office) |
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| behalf of itse of acquiring, priority, in th derived there | olf and its successor the entire and ex- ne INVENTION and t efrom, such as cont | ensing, LLC, a Washington lims and assigns ("ASSIGNEE"), is a clusive rights, title and interested the APPLICATION (and all other tinuing applications, in whole all foreign countries ("APPLIC | entiti est, i rapp or ir | ed to, and is desirous ncluding the right of dications and patents n part, in and for the |
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| 12 | 11/20/2015 |
| Inventor's Signature | Date |
| Jianshu Chen | 陈建树 |
| Printed Name in English | Printed Name in Native Language |
| | (if other than English) |