

## 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>
Chenyu Zhao	09/21/2016
Di Wang	09/22/2016
SAMUEL SZE MING IEONG	09/26/2016
Christopher K. Harris	09/28/2016
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<b>Postal Code:</b>	94043
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16281538
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<b>ATTORNEY DOCKET NUMBER:</b>	16113-7958003
<b>NAME OF SUBMITTER:</b>	CHRISTINE M. TOMLINSON
<b>SIGNATURE:</b>	/Christine M. Tomlinson/
<b>DATE SIGNED:</b>	02/21/2019
<b>Total Attachments: 3</b>	
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ASSIGNMENT and CONFIRMATION

We, Chenyu Zhao, Di Wang, Samuel Sze Ming leong and Christopher K. Harris, each hereby confirm the assignment and transfer to Google Inc., a Delaware corporation having a place of business at 1600 Amphitheatre Parkway, Mountain View, California 94043, and its successors and assigns (collectively, "ASSIGNEE") of all of our individual and joint right, title and interest throughout the world in and to any and all inventions and improvements that are the subject or subjects of a patent application entitled

**OPTIMIZATION OF A MULTI-CHANNEL SYSTEM USING A FEEDBACK LOOP**

that names us as inventors, and was filed in United States on October 11, 2016, as application no. 15/290,940. We authorize and request the attorneys filing the application to complete this assignment by inserting the filing date and serial number of the application when known. The foregoing assignment and transfer occurred by operation of one or more agreements relating to our employment by Google Inc. or an affiliate of Google Inc. Should any of us have any remaining interest, we each hereby assign and transfer any right, title or interest we may have in the above-mentioned inventions and improvements anywhere in the world to ASSIGNEE.

This assignment and confirmation includes the foregoing patent application or patent; all legal equivalents thereof in any country and all patents issuing therefrom; all patents, utility models, and design registrations granted for any of said inventions and improvements throughout the world; and the right to claim priority based on the filing date of the foregoing patent application or patent under the International Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other treaties of like purposes. We authorize ASSIGNEE to apply in all countries in our names or in the name of ASSIGNEE for patents, utility models, and design registrations and like rights of exclusion and for inventors' certificates for the assigned inventions and improvements.


The foregoing assignments have been made for good and valuable consideration, the receipt of which is hereby acknowledged, and in accordance with the employment-related agreements existing at the time the above-mentioned inventions and improvements were made.

We hereby represent and covenant that no assignment, agreement or encumbrance has been or will be made or entered into by us that would conflict with the above-mentioned assignment of the inventions and improvements to ASSIGNEE.

We further covenant for ourselves and our respective heirs, legal representatives and assigns to provide to ASSIGNEE promptly upon the request of ASSIGNEE all pertinent facts and documents relating to any of the above-mentioned inventions and improvements, patent applications, patents and legal equivalents, as may be known and accessible to us; to testify as to the same in any interference, litigation, or proceeding relating thereto; and promptly to execute and deliver to ASSIGNEE or its legal representative any and all papers, instruments or affidavits required to apply for, obtain, maintain, issue or enforce any of the above-mentioned applications, inventions and improvements, patents and equivalents thereof which may be necessary or desirable to carry out the purposes thereof.

Dated: 9/21/2016

DocuSigned by:



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Chenyu Zhao

Dated: 9/22/2016

DocuSigned by:

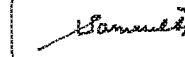


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Di Wang

Dated: 9/26/2016

DocuSigned by:



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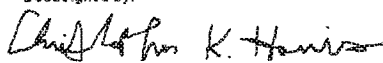
Samuel Sze Ming leong

Attorney's Docket No.: 16113-7958001

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Dated: 9/28/2016

DocuSigned by:

  
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Christopher K. Harris

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