

## 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>
SHAOSHENG CAO	12/23/2019
XINXING YANG	12/23/2019
JUN ZHOU	12/23/2019
XIAOLONG LI	12/23/2019
<b>RECEIVING PARTY DATA</b>	
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<b>Street Address:</b>	FOURTH FLOOR, ONE CAPITAL PLACE
<b>Internal Address:</b>	P.O. BOX 847
<b>City:</b>	GEORGE TOWN, GRAND CAYMAN
<b>State/Country:</b>	CAYMAN ISLANDS
<b>Postal Code:</b>	KY1-1103
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
Application Number:	16736673
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<b>ATTORNEY DOCKET NUMBER:</b>	50GL-307950
<b>NAME OF SUBMITTER:</b>	WEIGUO CHEN
<b>SIGNATURE:</b>	/Weiguo Chen/
<b>DATE SIGNED:</b>	01/07/2020
<b>Total Attachments: 3</b>	

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ASSIGNMENT

For valuable consideration, the receipt of which we acknowledge, and intending to be bound legally, we, Shaosheng CAO, Xinxing YANG, Jun ZHOU, and Xiaolong LI, each individually have assigned or hereby assign to ALIBABA GROUP HOLDING LIMITED, a corporation formed under the laws of Cayman Islands and having a principal place of business at Fourth Floor, One Capital Place, P.O. Box 847, George Town, Grand Cayman, Cayman Islands, KY1-1103, and its successors, transferees, and assignees (collectively the "Assignee"), all of our individual and joint right, title, and interest throughout the world in all of the subject matter and invention(s) (the "Subject Matter") of the following applications that name us as inventors: Chinese Patent Application No. 201710932631.0, filed October 10, 2017 (the "Chinese Application"), PCT Application No. PCT/CN2018/104922, filed September 11, 2018 (the "PCT Application"), that claims priority to the Chinese Application, and a patent application titled "RANDOM WALKING AND CLUSTER-BASED RANDOM WALKING METHOD, APPARATUS AND DEVICE", that claims priority to the PCT Application and the Chinese Application and was or will be filed in the United States Patent and Trademark Office on January 7, 2020, as application number 16/736,673 (the "U.S. Application"). We authorize the insertion of the filing date and application number above.

We each individually have assigned or hereby assign, in addition to the Subject Matter, (a) the Chinese Application, the PCT Application, the U.S. Application, and all other applications that may be made for, and all patents, utility models, design registrations, and other rights of exclusion and inventors' certificates for any of the Subject Matter in every country or region and under every treaty or convention (collectively the "Applications and Granted Rights"); (b) the right to claim priority based on, and the benefit of the filing date of, any of the Applications and Granted Rights under the Paris Convention for the Protection of Industrial Property, the Patent Cooperation Treaty, the European Patent Convention, and all other applicable treaties, conventions, or national laws; and (c) the right to pursue, collect, and retain in the Assignee's name or otherwise, damages and any other remedies arising from any past, present, or future infringement of the Subject Matter, the Applications and Granted Rights, and any other rights assigned by this Assignment.

We authorize the Assignee to apply for and pursue protection for any or all of the

Subject Matter, the Applications and Granted Rights, and any other rights assigned by this Assignment in all countries, regions, and territories of the world, in our names or in the Assignee's name.

We represent and warrant that we have the right and power to make this Assignment and that we have not made, and will not make, any other assignment that conflicts with this Assignment.

We will communicate to the Assignee (or at the request of the Assignee to other parties) all known facts, in any form, relating to the Subject Matter, will execute and provide all oaths and declarations, statements, testimony, assignments, powers of attorney, applications, and documents, and will perform all other lawful acts necessary or desirable to secure fully to the Assignee the rights, titles, and interests assigned by this Assignment.

Shaosheng CAO  
Shaosheng CAO

Date: 2019.12.23

Witnessed by:

Signature: Zhengwei WU

Date: 2019.12.23

Print Name: Zhengwei WU

Xinxing YANG  
Xinxing YANG

Date: 2019.12.23

Witnessed by:

Signature: Zhengwei WU

Date: 2019.12.23

Print Name: Zhengwei WU

Jun Z.  
Jun ZHOU

Date: 2019.12.23

Witnessed by:

Signature: Zhengwei Wu  
Print Name: Zhengwei Wu

Date: 2019.12.23

Xiaolong Li  
Xiaolong LI

Date: 2019-12-23

Witnessed by:

Signature: Zhengwei Wu  
Print Name: Zhengwei Wu

Date: 2019-12-23