505770864 11/13/2019

PATENT ASSIGNMENT COVER SHEET

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SUBMISSION TYPE: NEW ASSIGNMENT

NATURE OF CONVEYANCE: ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
KI-HO CHOI	11/04/2019
MIN-SOO PARK	11/04/2019
ELENA ALSHINA	10/26/2019

RECEIVING PARTY DATA

Name:	SAMSUNG ELECTRONICS CO., LTD.
Street Address:	129, SAMSUNG-RO, YEONGTONG-GU, GYEONGGI-DO
City:	SUWON-SI
State/Country:	KOREA, REPUBLIC OF
Postal Code:	16677

PROPERTY NUMBERS Total: 1

Property Type	Number	
Application Number:	16613184	

CORRESPONDENCE DATA

Fax Number: (202)293-7860

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.

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Correspondent Name: SUGHRUE MION, PLLC

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Address Line 2: SUITE 900

Address Line 4: WASHINGTON, D.C. 20006

ATTORNEY DOCKET NUMBER:	Q239828
NAME OF SUBMITTER:	TIANA R. STEWART-TEAMS
SIGNATURE:	/Tiana R. Stewart/
DATE SIGNED:	11/13/2019
	This document serves as an Oath/Declaration (37 CFR 1.63).

Total Attachments: 4

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PATENT REEL: 050993 FRAME: 0991 source=Q239828ExecCDA#page3.tif source=Q239828ExecCDA#page4.tif

> PATENT REEL: 050993 FRAME: 0992

Docket No.: Q239828 Samsung Ref: MD2017070011US1

Only After Sept 16, 2012

ASSIGNMENT WITH DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

Whereas, We, the undersigned inventors hereinafter called assignors, have invented certain improvements described in the application identified below; and

Whereas, SAMSUNG ELECTRONICS CO., LTD. of 129, Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677, Republic of Korea, (assignee), desires to acquire the entire right, title, and interest in the application and invention, and to any United States patents to be obtained therefor:

Now therefore, for valuable consideration, receipt whereof is hereby acknowledged,

We, the above named assignors, hereby sell, assign and transfer to the above named assignce, its successors and assigns, the entire right, title and interest in the application and the invention disclosed therein for the United States of America and all other countries, including all divisions, and continuations thereof, and all Letters Patent of the United States that may be granted thereon, and all reissues thereof, and including rights of priority under the International Convention of Paris (1883) as amended, the laws of all foreign countries, and the laws of the United States including the right to claim priority under 35 USC 119 and the right to sue for past damages, and we request the Director of the U.S. Patent and Trademark Office to issue any Letters Patent granted upon the invention set forth in the application to the assignce, its successors and assigns; and we hereby agree that the assignce may apply for foreign Letters Patent on the invention and we will execute without further consideration all papers deemed necessary by the assignee in connection with the United States and foreign applications when called upon to do so by the assignee.

As the below named inventor, I hereby declare that:			
This assignment with declaration is directed to:		The attached application, or	

The application is entitled:

VIDEO DECODING METHOD AND APPARATUS USING MULTI-CORE TRANSFORM, AND VIDEO ENCODING METHOD AND APPARATUS USING MULTI-CORE TRANSFORM

United States Application or PCT International Application Number PCT/KR2018/007506

The above identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

filed on July 3, 2018.

(Legalization not required for recording but is prima facie evidence of execution under 35 USC 261)

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

> **PATENT** REEL: 050993 FRAME: 0993

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NAME OF SOLE OR FIRST INVENTOR:				
Given Name				
(first and middle [if any]) Ki-ho Family Name or Surname CHOI				
Inventor's signature Line Chai Date 2019, 11, o St				
Residence: Seoul, Republic of Korea				
Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Scoul 04713, Republic of Korea	********			
NAME OF SECOND INVENTOR:				
Given Name				
(first and middle [if any]) Min-soo Family Name or Surname PARK				
Inventor's signature Min 500 Park Date 2019, 11,04				
Inventor's signature / (1, v) 500 (AVK Date (1, 0) 4				
Residence: Seoul, Republic of Korea				
Maritim at Administration of Commission of Table Common Commission of English of English of English				
Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea				
NAME OF THIRD INVENTOR:				
Given Name (first and middle [if anv]) Elena Family Name or Surname ALSHINA				
(first and middle [if any]) Elena Family Name or Surname ALSHINA				
Inventor's signature Date				
Inventor's signature Date				
Duridana Cand Danible of Fano				
Residence: Seoul, Republic of Korea				
Mailing Address: 102-102, 67, Segnochon-gil, Segcho-gu, Segul 06765, Republic of Korea				

PATENT REEL: 050993 FRAME: 0994

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Docket No.: Q239828 Samsung Ref: MD2017070011US1

Only After Sept 16, 2012

ASSIGNMENT WITH DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION (37 CFR 1.63)

Whereas, We, the undersigned inventors hereinafter called assignors, have invented certain improvements described in the application identified below; and

Whereas, <u>SAMSUNG ELECTRONICS CO. LTD. of 129</u>, <u>Samsung-ro, Yeongtong-gu, Suwon-si, Gyeonggi-do, 16677</u>, <u>Republic of Korea</u>, (assignee), desires to acquire the entire right, title, and interest in the application and invention, and to any United States patents to be obtained therefor:

Now therefore, for valuable consideration, receipt whereof is hereby acknowledged,

We, the above named assignors, hereby sell, assign and transfer to the above named assignee, its successors and assigns, the entire right, title and interest in the application and the invention disclosed therein for the United States of America and all other countries, including all divisions, and continuations thereof, and all Letters Patent of the United States that may be granted thereon, and all reissues thereof, and including rights of priority under the International Convention of Paris (1883) as amended, the laws of all foreign countries, and the laws of the United States including the right to claim priority under 35 USC 119 and the right to sue for past damages, and we request the Director of the U.S. Patent and Trademark Office to issue any Letters Patent granted upon the invention set forth in the application to the assignee, its successors and assigns; and we hereby agree that the assignee may apply for foreign Letters Patent on the invention and we will execute without further consideration all papers deemed necessary by the assignee in connection with the United States and foreign applications when called upon to do so by the assignee.

		•
As the below named inventor, I here	by de	clare that:
This assignment with declaration is		The attached application, or
directed to:	図	United States Application or PCT International Application Number PCT/KR2018/007506 filed on July 3, 2018.
The application is entitled:		

....

<u>VIDEO DECODING METHOD AND APPARATUS USING MULTI-CORE TRANSFORM, AND VIDEO ENCODING</u> METHOD AND APPARATUS USING MULTI-CORE TRANSFORM

The above identified application was made or was authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

(Legalization not required for recording but is prima facie evidence of execution under 35 USC 261)

I have reviewed and understand the contents of the application for which this assignment with declaration is being submitted.

I am aware of the duty to disclose to the Office all information known to me to be material to patentability as defined in 37 CFR 1.56.

I hereby acknowledge that any willful false statement made in this assignment with declaration is punishable under 18 USC 1001 by fine or imprisonment of not more than five (5) years, or both.

Given Name (first and middle [if any]) Ki-ho Family Name or Surname CHOI Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seoul 04713, Republic of Korea NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR: Given Name	NAME OF SOLE OR FIRST INVENTOR:					
Inventor's signature Residence: Seoul, Republic of Korea Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seoul 04713, Republic of Korea NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Given Name					
Residence: Seoul, Republic of Korea Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seoul 04713, Republic of Korea NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	(first and middle [if any]) Ki-ho	Family Name or Surname CH	OI			
Residence: Seoul, Republic of Korea Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seoul 04713, Republic of Korea NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:						
Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seoul 04713, Republic of Korea NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Inventor's signature	Date				
NAME OF SECOND INVENTOR: Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Residence: Seoul, Republic of Korea					
Given Name (first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Mailing Address: 111-1403, 79, Haengdang-ro, Seongdong-gu, Seou	1 04713, Republic of Korea				
(first and middle [if any]) Min-soo Family Name or Surname PARK Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	NAME OF SECOND INVENTOR:					
Inventor's signature Date Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Given Name					
Residence: Seoul, Republic of Korea Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	(first and middle [if any]) Min-soo	Family Name or Surname PA	RK			
Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea NAME OF THIRD INVENTOR:	Inventor's signature	Date	**			
NAME OF THIRD INVENTOR:	Residence: Seoul, Republic of Korea					
	Mailing Address: 1-103, 28, Gurojungang-ro 7-gil, Guro-gu, Seoul 08312, Republic of Korea					
Given Name						
	Given Name					
(first and middle [if any]) Elena Family Name or Surname ALSHINA	(first and middle [if any]) Elena	Family Name or Surname AL	SHINA			
Inventor's signature Date 26.10.2019	Inventor's signature	Date 26	6.10.2019			
Residence: Seoul, Republic of Korea	Residence: Seoul, Republic of Korea					
Mailing Address: 102-102, 67, Seongchon-gil, Seocho-gu, Seoul 06765, Republic of Korea		65, Republic of Korea				