

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT4735372

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT	
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT	
<b>CONVEYING PARTY DATA</b>		
	<b>Name</b>	<b>Execution Date</b>
	BIAO WANG	10/27/2017
	BING YU	10/26/2017
	CHANG KYU CHOI	12/11/2017
	DEHENG QIAN	10/25/2017
	JAE-JOON HAN	12/11/2017
	JINGTAO XU	10/25/2017
	YAOZU AN	10/26/2017
<b>RECEIVING PARTY DATA</b>		
<b>Name:</b>	SAMSUNG ELECTRONICS CO., LTD.	
<b>Street Address:</b>	129, SAMSUNG-RO, YEONGTONG-GU, GYEONGGI-DO	
<b>City:</b>	SUWON-SI	
<b>State/Country:</b>	KOREA, REPUBLIC OF	
<b>Postal Code:</b>	16677	
<b>PROPERTY NUMBERS Total: 1</b>		
	<b>Property Type</b>	<b>Number</b>
	Application Number:	15842190
<b>CORRESPONDENCE DATA</b>		
<b>Fax Number:</b>	(202)315-3758	
<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>	202-429-0020	
<b>Email:</b>	pto@nsiplaw.com	
<b>Correspondent Name:</b>	NSIP LAW	
<b>Address Line 1:</b>	P.O. BOX 65745	
<b>Address Line 4:</b>	WASHINGTON, D.C. 20035	
<b>ATTORNEY DOCKET NUMBER:</b>	012052.1529	
<b>NAME OF SUBMITTER:</b>	S. MAHMOOD AHMAD	
<b>SIGNATURE:</b>	/S. Mahmood Ahmad/	
<b>DATE SIGNED:</b>	12/14/2017	

**Total Attachments: 18**

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## COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)

### DECLARATION

As a below-named inventor, I hereby declare that this declaration is directed to the application attached hereto, or to United States Application Number or PCT International Application Number \_\_\_\_\_ filed on \_\_\_\_\_ (if applicable), entitled:

### IMAGE PROCESSING METHOD AND APPARATUS

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

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

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

I have reviewed and understand the contents of the above-identified application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information that became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

### ASSIGNMENT

For valuable consideration, I, as a below-named assignor, hereby assign to:

SAMSUNG ELECTRONICS CO., LTD.  
129, Samsung-ro, Yeongtong-gu  
Suwon-si, Gyeonggi-do, 16677  
Republic of Korea

and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title, and interest throughout the world in the inventions and improvements that are the subject of the application identified in the above declaration, which is United States Application Number or PCT International Application Number 15/842,190 filed on December 14, 2017.

I authorize and request the attorneys appointed in the above-identified application to hereafter complete this Assignment by inserting above the application number and the filing date of the above-identified application when known, and to correct any typographical errors that may be discovered in this Assignment.

This Assignment includes the above-identified application, any and all United States and foreign patents, utility models, and design registrations granted for any of the inventions and improvements that are the subject of the above-identified application, and the right to claim priority based on the filing date of the above-identified application 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; and I authorize the Assignee to apply in all countries in my name or in its own name for patents, utility models, design registrations, like rights of exclusion, and inventors' certificates for any of the inventions and improvements that are the subject of the above-identified application; and I agree for myself and my heirs, legal representatives, and assigns without further

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compensation to perform such lawful acts and to sign such further applications, Assignments, preliminary statements, and other lawful documents as the Assignee may reasonably request to effectuate fully this Assignment.

In witness whereof, I, as a below-named inventor and assignor, intending to be legally bound, have hereunto affixed my signature on the date indicated below next to my signature.

Inventor's Legal Name	Biao WANG		
Inventor's Signature	Biao WANG	Date	2017.10.27
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	Bing YU		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	CHANG KYU CHOI		
Inventor's Signature		Date	
Residence (City, Country)	Seongnam-si, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	Deheng QIAN		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

**COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)**

Inventor's Legal Name	<b>Jae-Joon HAN</b>		
Inventor's Signature		Date	
Residence (City, Country)	Seoul, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	<b>Jingtao XU</b>		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	<b>Yaozu AN</b>		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

WC-201609-008-1-USO  
012052.1529

# COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)

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and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title, and interest throughout the world in the inventions and improvements that are the subject of the application identified in the above declaration, which is United States Application Number or PCT International Application Number 15/842,190 filed on December 14, 2017.

I authorize and request the attorneys appointed in the above-identified application to hereafter complete this Assignment by inserting above the application number and the filing date of the above-identified application when known, and to correct any typographical errors that may be discovered in this Assignment.


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012052.1529**COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)**

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In witness whereof, I, as a below-named inventor and assignor, intending to be legally bound, have hereunto affixed my signature on the date indicated below next to my signature.

Inventor's Legal Name	Biao WANG		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	Bing YU		
Inventor's Signature		Date	2017. 10. 26
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	CHANG KYU CHOI		
Inventor's Signature		Date	
Residence (City, Country)	Seongnam-si, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

Inventor's Legal Name	Deheng QIAN		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		





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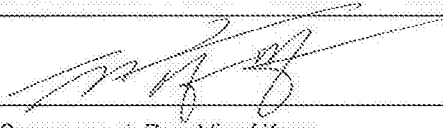
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Inventor's Legal Name	CHIANG KYU CHOI		
Inventor's Signature		Date	December 11, 2017
Residence (City, Country)	Seongnam-si, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

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Inventor's Legal Name	Jae-Joon HAN		
Inventor's Signature		Date	December 11, 2017
Residence (City, Country)	Seoul, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)

Inventor's Legal Name	Jingtao XU		
Inventor's Signature		Date	
Residence (City, Country)	Beijing, P.R.China		
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SAMSUNG

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Inventor's Legal Name	Deheng QIAN		
Inventor's Signature	Deheng Qian	Date	2017-10-25
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Inventor's Legal Name	<b>Jae-Joon HAN</b>		
Inventor's Signature		Date	
Residence (City, Country)	Seoul, Republic of Korea		
Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

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Inventor's Signature		Date	
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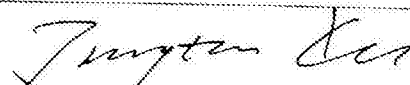
Inventor's Legal Name	<b>CHANG KYU CHOI</b>		
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Inventor's Legal Name	Yaozu AN		
Inventor's Signature		Date	
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Mailing Address	Samsung Advanced Institute of Technology, 130 Samsung-ro, Youngtong-gu, Suwon-si, Gyeonggi-do, 16678, Republic of Korea		

## COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)

### DECLARATION

As a below-named inventor, I hereby declare that this declaration is directed to the application attached hereto, or to United States Application Number or PCT International Application Number \_\_\_\_\_ filed on \_\_\_\_\_ (if applicable), entitled:

### IMAGE PROCESSING METHOD AND APPARATUS

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

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

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

I have reviewed and understand the contents of the above-identified application, including the claims.

I am aware of the duty to disclose to the United States Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR 1.56, including for continuation-in-part applications, material information that became available between the filing date of the prior application and the national or PCT international filing date of the continuation-in-part application.

### ASSIGNMENT

For valuable consideration, I, as a below-named assignor, hereby assign to:

SAMSUNG ELECTRONICS CO., LTD.  
129, Samsung-ro, Yeongtong-gu  
Suwon-si, Gyeonggi-do, 16677  
Republic of Korea

and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title, and interest throughout the world in the inventions and improvements that are the subject of the application identified in the above declaration, which is United States Application Number or PCT International Application Number 15/842,190 filed on December 14, 2017.

I authorize and request the attorneys appointed in the above-identified application to hereafter complete this Assignment by inserting above the application number and the filing date of the above-identified application when known, and to correct any typographical errors that may be discovered in this Assignment.

This Assignment includes the above-identified application, any and all United States and foreign patents, utility models, and design registrations granted for any of the inventions and improvements that are the subject of the above-identified application, and the right to claim priority based on the filing date of the above-identified application 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; and I authorize the Assignee to apply in all countries in my name or in its own name for patents, utility models, design registrations, like rights of exclusion, and inventors' certificates for any of the inventions and improvements that are the subject of the above-identified application; and I agree for myself and my heirs, legal representatives, and assigns without further

# **COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)**

compensation to perform such lawful acts and to sign such further applications, Assignments, preliminary statements, and other lawful documents as the Assignee may reasonably request to effectuate fully this Assignment.

In witness whereof, I, as a below-named inventor and assignor, intending to be legally bound, have hereunto affixed my signature on the date indicated below next to my signature.

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COMBINED DECLARATION AND ASSIGNMENT UNDER 37 CFR 1.63(e)

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Inventor's Legal Name	Jingtao XU		
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Inventor's Signature	Yaozu AN	Date	2017.10.26
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