

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5897738

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT
CONVEYING PARTY DATA	
Name	Execution Date
FAN ZHANG	01/03/2020
CHENRONG XIONG	12/15/2019
HAOBO WANG	01/03/2020
HONGWEI DUAN	01/03/2020
JIANGNAN XIA	01/03/2020
RECEIVING PARTY DATA	
Name:	SK HYNIX INC.
Street Address:	2091, GYEONGCHUNG-DAERO
Internal Address:	BUBAL-EUB, GYEONGGI-DO
City:	ICHEON-SI
State/Country:	KOREA, REPUBLIC OF
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	16680330
CORRESPONDENCE DATA	
Fax Number:	
<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>	
Email:	mbright@perkinscoie.com
Correspondent Name:	BABAK TEHRANCHI
Address Line 1:	PERKINS COIE LLP
Address Line 2:	PO BOX 1247
Address Line 4:	SEATTLE, WASHINGTON 98111-1247
ATTORNEY DOCKET NUMBER:	088453-8811.US00
NAME OF SUBMITTER:	MEGHAN BRIGHT
SIGNATURE:	/Meghan Bright/
DATE SIGNED:	01/07/2020
	This document serves as an Oath/Declaration (37 CFR 1.63).
Total Attachments: 15	

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Applicant: SK hynix Inc.

Inventors: Fan Zhang et al.

Examiner: Not Yet Assigned

Application No.: 16/680,330

Confirmation No.: 8369

Filing Date: November 11, 2019

Art Unit: 2112

Title: FAST-CONVERGING BIT-FLIPPING
DECODER FOR LOW-DENSITY PARITY-CHECK
CODES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION AND ASSIGNMENT BY INVENTOR
UNDER RULE 37 C.F.R. § 1.63

I, Fan Zhang, of Fremont, California, hereby declare that:

I believe I am the sole original inventor or an original joint inventor of a claimed invention in a patent application entitled:

**FAST-CONVERGING BIT-FLIPPING DECODER FOR
LOW-DENSITY PARITY-CHECK CODES**

which was filed on November 11, 2019, as Application No. 16/680,330.

I believe the following persons are original joint inventors of the above-identified patent application(s):

Chenrong Xiong, of San Jose, California;

Haobo Wang, of San Jose, California;

Hongwei Duan, of Cupertino, California; and

Jiangnan Xia, of San Jose, California.

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

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

Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 2 of 3

Docket No. 088453-8811.US00

I am aware of the duty to disclose to the U.S. Patent and Trademark 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 the above declaration is punishable under 18 USC §1001 by fine or imprisonment of not more than five (5) years, or both.

ASSIGNMENT

I hereby assign to SK hynix Inc., a corporation of Republic of Korea, having a place of business at 2091, Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-Do, Republic of Korea, and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title and interest throughout the world in any and all inventions and improvements which are described in an application for United States Patent, entitled *FAST-CONVERGING BIT-FLIPPING DECODER FOR LOW-DENSITY PARITY-CHECK CODES*, filed on November 11, 2019, and assigned U.S. Application Number 16/680,330.

This assignment includes the entire right, title and interest in said application(s), all legal equivalents thereof in any country, any and all United States and foreign patents, utility models, and design registrations granted for any of said inventions and improvements, including, but not limited to, all divisions, continuations, reissues, reexamination certificates, any and all certificates issued in any post-grant proceeding, and extensions of said application(s) and patents of the United States, foreign patents, utility models, and design registrations, and the right to claim priority based on the filing date of said application(s) 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 the right to seek relief and recover all damages, including, but not limited to, a reasonable royalty, by reason of infringement or any other violation of patent or patent application rights. I authorize the Assignee to apply in all countries in my name or in the name of the Assignee for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements.

In addition, I hereby confirm the sale, assignment, and transfer to the Assignee of the entire right, title and interest throughout the world in said inventions and improvements by operation of an employment agreement between me and the Assignee existing at the time said inventions and improvements were made. Should I have any remaining interest, I hereby sell, assign, and transfer to the Assignee any right, title and interest I may have in said inventions and improvements anywhere in the world.

The foregoing assignments, sale and transfer have been made for good and valuable consideration, the receipt of which is hereby acknowledged.

Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 3 of 3

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I further covenant for myself and my respective heirs, legal representatives and assigns, to assist the Assignee in handling various procedures, tasks and documentation in connection with this assignment, including, but not limited to, providing to the Assignee promptly upon the request of the Assignee all pertinent facts and documents relating to said invention and improvements, and said patents, said legal equivalents or other legal instrument as may be known and accessible to me and testifying as to the same in any interference, litigation, or proceeding relating thereto, and promptly executing and delivering to the Assignee or its legal representative any and all papers, documents, instruments or affidavits in connection with obtaining, maintaining, issuing or enforcing said application(s), said inventions and improvements, and said patents, said equivalents and other legal instrument which may be necessary or desirable to carry out the purposes thereof.

I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

Full name of inventor: FAN ZHANG

Inventor's signature: _____

Date: 1/3/2020

Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
Telephone: (858) 720-5700
Facsimile: (206) 359-7198

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Applicant: SK hynix Inc.

Inventors: Fan Zhang et al.

Examiner: Not Yet Assigned

Application No.: 16/680,330

Confirmation No.: 8369

Filing Date: November 11, 2019

Art Unit: 2112

Title: FAST-CONVERGING BIT-FLIPPING
DECODER FOR LOW-DENSITY PARITY-CHECK
CODES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION AND ASSIGNMENT BY INVENTOR
UNDER RULE 37 C.F.R. § 1.63

I, Chenrong Xiong, of San Jose, California, hereby declare that:

I believe I am the sole original inventor or an original joint inventor of a claimed invention in a patent application entitled:

**FAST-CONVERGING BIT-FLIPPING DECODER FOR
LOW-DENSITY PARITY-CHECK CODES**

which was filed on November 11, 2019, as Application No. 16/680,330.

I believe the following persons are original joint inventors of the above-identified patent application(s):

Fan Zhang, of Fremont, California;

Haobo Wang, of San Jose, California;

Hongwei Duan, of Cupertino, California; and

Jiangnan Xia, of San Jose, California.

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

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

I am aware of the duty to disclose to the U.S. Patent and Trademark Office all information known to me to be material to patentability as defined in 37 CFR §1.56.

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ASSIGNMENT

I hereby assign to SK hynix Inc., a corporation of Republic of Korea, having a place of business at 2091, Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-Do, Republic of Korea, and its successors and assigns (collectively hereinafter called “the Assignee”), the entire right, title and interest throughout the world in any and all inventions and improvements which are described in an application for United States Patent, entitled *FAST-CONVERGING BIT-FLIPPING DECODER FOR LOW-DENSITY PARITY-CHECK CODES*, filed on November 11, 2019, and assigned U.S. Application Number 16/680,330.

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The foregoing assignments, sale and transfer have been made for good and valuable consideration, the receipt of which is hereby acknowledged.

Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 3 of 3

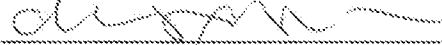
Docket No. 088453-8811 US00

I hereby represent and covenant that no assignment, sale, agreement or encumbrance has been or will be made or entered into that would conflict with the assignment of said inventions and improvements to the Assignee.

I further covenant for myself and my respective heirs, legal representatives and assigns, to assist the Assignee in handling various procedures, tasks and documentation in connection with this assignment, including, but not limited to, providing to the Assignee promptly upon the request of the Assignee all pertinent facts and documents relating to said invention and improvements, and said patents, said legal equivalents or other legal instrument as may be known and accessible to me and testifying as to the same in any interference, litigation, or proceeding relating thereto, and promptly executing and delivering to the Assignee or its legal representative any and all papers, documents, instruments or affidavits in connection with obtaining, maintaining, issuing or enforcing said application(s), said inventions and improvements, and said patents, said equivalents and other legal instrument which may be necessary or desirable to carry out the purposes thereof.

I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

Full name of inventor: CHENRONG XIONG

Inventor's signature: 

Date: 12/15/2019

Perkins Coie LLP
P O. Box 1247
Seattle, Washington 98111-1247
Telephone: (858) 720-5700
Facsimile: (206) 359-7198

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Applicant: SK hynix Inc.

Inventors: Fan Zhang et al.

Examiner: Not Yet Assigned

Application No.: 16/680,330

Confirmation No.: 8369

Filing Date: November 11, 2019

Art Unit: 2112

Title: FAST-CONVERGING BIT-FLIPPING
DECODER FOR LOW-DENSITY PARITY-CHECK
CODES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION AND ASSIGNMENT BY INVENTOR
UNDER RULE 37 C.F.R. § 1.63

I, Haobo Wang, of San Jose, California, hereby declare that:

I believe I am the sole original inventor or an original joint inventor of a claimed invention in a patent application entitled:

**FAST-CONVERGING BIT-FLIPPING DECODER FOR
LOW-DENSITY PARITY-CHECK CODES**

which was filed on November 11, 2019, as Application No. 16/680,330.

I believe the following persons are original joint inventors of the above-identified patent application(s):

Fan Zhang, of Fremont, California;
Chenrong Xiong, of San Jose, California;
Hongwei Duan, of Cupertino, California; and
Jiangnan Xia, of San Jose, California.

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

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

Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 2 of 3

Docket No. 088453-8811.US00

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

ASSIGNMENT

I hereby assign to SK hynix Inc., a corporation of Republic of Korea, having a place of business at 2091, Gyeongchung-daero, Bubal-eub, Icheon-si, Gyeonggi-Do, Republic of Korea, and its successors and assigns (collectively hereinafter called "the Assignee"), the entire right, title and interest throughout the world in any and all inventions and improvements which are described in an application for United States Patent, entitled *FAST-CONVERGING BIT-FLIPPING DECODER FOR LOW-DENSITY PARITY-CHECK CODES*, filed on November 11, 2019, and assigned U.S. Application Number 16/680,330.

This assignment includes the entire right, title and interest in said application(s), all legal equivalents thereof in any country, any and all United States and foreign patents, utility models, and design registrations granted for any of said inventions and improvements, including, but not limited to, all divisions, continuations, reissues, reexamination certificates, any and all certificates issued in any post-grant proceeding, and extensions of said application(s) and patents of the United States, foreign patents, utility models, and design registrations, and the right to claim priority based on the filing date of said application(s) 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 the right to seek relief and recover all damages, including, but not limited to, a reasonable royalty, by reason of infringement or any other violation of patent or patent application rights. I authorize the Assignee to apply in all countries in my name or in the name of the Assignee for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements.

In addition, I hereby confirm the sale, assignment, and transfer to the Assignee of the entire right, title and interest throughout the world in said inventions and improvements by operation of an employment agreement between me and the Assignee existing at the time said inventions and improvements were made. Should I have any remaining interest, I hereby sell, assign, and transfer to the Assignee any right, title and interest I may have in said inventions and improvements anywhere in the world.

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Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 3 of 3

Docket No. 088453-8811.US00

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I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

Full name of inventor: HAOBO WANG

Inventor's signature: Haobo Wang

Date: 1 / 31 / 2020

Perkins Coie LLP
P.O. Box 1247
Seattle, Washington 98111-1247
Telephone: (858) 720-5700
Facsimile: (206) 359-7198

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:

Applicant: SK hynix Inc.

Inventors: Fan Zhang et al.

Examiner: Not Yet Assigned

Application No.: 16/680,330

Confirmation No.: 8369

Filing Date: November 11, 2019

Art Unit: 2112

Title: FAST-CONVERGING BIT-FLIPPING
DECODER FOR LOW-DENSITY PARITY-CHECK
CODES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION AND ASSIGNMENT BY INVENTOR
UNDER RULE 37 C.F.R. § 1.63

I, Hongwei Duan, of Cupertino, California, hereby declare that:

I believe I am the sole original inventor or an original joint inventor of a claimed invention in a patent application entitled:

**FAST-CONVERGING BIT-FLIPPING DECODER FOR
LOW-DENSITY PARITY-CHECK CODES**

which was filed on November 11, 2019, as Application No. 16/680,330.

I believe the following persons are original joint inventors of the above-identified patent application(s):

Fan Zhang, of Fremont, California;

Chenrong Xiong, of San Jose, California;

Haobo Wang, of San Jose, California; and

Jiangnan Xia, of San Jose, California.

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

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

Inventor : Fan Zhang et al.
Appl. No. : 16/680,330
Filed : November 11, 2019
Page : 2 of 3

Docket No. 088453-8811.US00

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ASSIGNMENT

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This assignment includes the entire right, title and interest in said application(s), all legal equivalents thereof in any country, any and all United States and foreign patents, utility models, and design registrations granted for any of said inventions and improvements, including, but not limited to, all divisions, continuations, reissues, reexamination certificates, any and all certificates issued in any post-grant proceeding, and extensions of said application(s) and patents of the United States, foreign patents, utility models, and design registrations, and the right to claim priority based on the filing date of said application(s) 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 the right to seek relief and recover all damages, including, but not limited to, a reasonable royalty, by reason of infringement or any other violation of patent or patent application rights. I authorize the Assignee to apply in all countries in my name or in the name of the Assignee for patents, utility models, design registrations and like rights of exclusion and for inventors' certificates for said inventions and improvements.

In addition, I hereby confirm the sale, assignment, and transfer to the Assignee of the entire right, title and interest throughout the world in said inventions and improvements by operation of an employment agreement between me and the Assignee existing at the time said inventions and improvements were made. Should I have any remaining interest, I hereby sell, assign, and transfer to the Assignee any right, title and interest I may have in said inventions and improvements anywhere in the world.

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Inventor : Fan Zhang et al.
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I am competent to execute the above declaration and assignment. I hereby have duly executed the declaration and assignment below with my name.

Full name of inventor: HONGWEI DUAN

Inventor's signature: _____

Date: _____

Perkins Coie LLP
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Seattle, Washington 98111-1247
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Facsimile: (206) 359-7198

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In re Patent Application of:

Applicant: SK hynix Inc.

Inventors: Fan Zhang et al.

Examiner: Not Yet Assigned

Application No.: 16/680,330

Confirmation No.: 8369

Filing Date: November 11, 2019

Art Unit: 2112

Title: FAST-CONVERGING BIT-FLIPPING
DECODER FOR LOW-DENSITY PARITY-CHECK
CODES

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

DECLARATION AND ASSIGNMENT BY INVENTOR
UNDER RULE 37 C.F.R. § 1.63

I, Jiangnan Xia, of San Jose, California, hereby declare that:

I believe I am the sole original inventor or an original joint inventor of a claimed invention in a patent application entitled:

**FAST-CONVERGING BIT-FLIPPING DECODER FOR
LOW-DENSITY PARITY-CHECK CODES**

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Chenrong Xiong, of San Jose, California;

Haobo Wang, of San Jose, California; and

Hongwei Duan, of Cupertino, California.

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Appi. No. : 16/680,330
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Full name of inventor: JIANGNAN XIA

Inventor's signature: 

Date: 1/3/2020

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Seattle, Washington 98111-1247
Telephone: (858) 720-5700
Facsimile: (206) 359-7198

PATENT

RECORDED: 01/07/2020

Haobo Wang/Algorithm

REEL: 051437 FRAME: 0488 20200103 12:38