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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5330426

| | | NEW ASSIGNMENT | |
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| ATURE OF CONVEYAN | F CONVEYANCE: ASSIGNMENT | | |
| CONVEYING PARTY DA | ТА | | |
| | | Name | Execution Date |
| YANG HU | | | 12/03/2010 |
| JOEL SOLE | | | 12/06/2010 |
| XIAOAN LU | | | 12/02/2010 |
| PENG YIN | | | 12/05/2010 |
| YUNFEI ZHENG | | | 12/03/2010 |
| | ΓΑ | | |
| Name: | | ON LICENSING | |
| Street Address: | 1-5, RU | E JEANNE D'ARC | |
| City: | ISSY-LE | ES-MOULINEAUX | |
| State/Country: | FRANCE | _ | |
| Postal Code: | 92130 | | |
| PROPERTY NUMBERS | Total: 1 | | |
| | Total: 1 | Number | |
| PROPERTY NUMBERS Property Type Application Number: | | Number 6123219 | |
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| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: | ATA e sent to rovided; | 6123219 the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 509-375-8214 | |
| Property Type Application Number: CORRESPONDENCE DA Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: | ATA sent to rovided; 6 | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 09-375-8214 prian.pritchett@interdigital.com | |
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| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 4: | ATA e sent to rovided; 6 b b c c c c c c c c c c c c c c c c c | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 09-375-8214 prian.pritchett@interdigital.com BRIAN J. DORINI, INTERDIGITAL RESEARCH WAY, 3RD FLOOR PRINCETON, NEW JERSEY 08540 | |
| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 4: | ATA e sent to rovided; 6 b b c c c c c c c c c c c c c c c c c | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 509-375-8214 orian.pritchett@interdigital.com BRIAN J. DORINI, INTERDIGITAL RESEARCH WAY, 3RD FLOOR PRINCETON, NEW JERSEY 08540 PU100199 US CNT3 | |
| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 4: | ATA e sent to rovided; 6 b b c c c c c c c c c c c c c c c c c | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 09-375-8214 prian.pritchett@interdigital.com BRIAN J. DORINI, INTERDIGITAL RESEARCH WAY, 3RD FLOOR PRINCETON, NEW JERSEY 08540 | |
| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 4: | ATA e sent to rovided; 6 b b c c c c c c c c c c c c c c c c c | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 509-375-8214 orian.pritchett@interdigital.com BRIAN J. DORINI, INTERDIGITAL RESEARCH WAY, 3RD FLOOR PRINCETON, NEW JERSEY 08540 PU100199 US CNT3 | |
| Property Type Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p Phone: Email: Correspondent Name: Address Line 1: Address Line 1: Address Line 4: TTORNEY DOCKET NU AME OF SUBMITTER: | ATA e sent to rovided; 6 b b c c c c c c c c c c c c c c c c c | the e-mail address first; if that is unsu if that is unsuccessful, it will be sent 09-375-8214 orian.pritchett@interdigital.com BRIAN J. DORINI, INTERDIGITAL RESEARCH WAY, 3RD FLOOR PRINCETON, NEW JERSEY 08540 PU100199 US CNT3 RONALD KOLCZYNSKI | |

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504629971 11/07/2017 PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4676689

| | | NEW ASSIGNMENT | | | |
|--|---------------------------|---|--|--|--|
| NATURE OF CONVEYAN | CE: | ASSIGNMENT | | | |
| CONVEYING PARTY DA | ТА | · | | | |
| | | Name Execution Date | | | |
| YANG HU | 12/03/2010 | | | | |
| JOEL SOLE | | 12/06/2010 | | | |
| XIAOAN LU | | 12/02/2010 | | | |
| PENG YIN | | 12/05/2010 | | | |
| YUNFEI ZHENG | | 12/03/2010 | | | |
| RECEIVING PARTY DAT | ΓΑ | | | | |
| Name: | | SON LICENSING | | | |
| Street Address: | 1-5, RL | JE JEANNE D'ARC | | | |
| City: | ISSY-L | ES-MOULINEAUX | | | |
| State/Country: | FRANC | CE | | | |
| Postal Code: | 92130 | | | | |
| | | Number | | | |
| Property Type | | | | | |
| Property Type Application Number: | | 15791470 | | | |
| Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be | ATA | 15791470 o the e-mail address first; if that is unsuccessful, it will be sent | | | |
| Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be | ATA sent to rovideo | 15791470 | | | |
| Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if p | ATA sent to rovideo | 15791470 D the e-mail address first; if that is unsuccessful, it will be sent d; if that is unsuccessful, it will be sent via US Mail. | | | |
| Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if po Phone: Email: Correspondent Name: | ATA sent to rovideo | 15791470 <i>The e-mail address first; if that is unsuccessful, it will be sent</i> <i>d; if that is unsuccessful, it will be sent via US Mail.</i> 609-734-6817 Brian.Pritchett@Technicolor.com BRIAN J. DORINI, THOMSON LICENSING LLC. | | | |
| Application Number: CORRESPONDENCE DA Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: Correspondent Name: Address Line 1: | ATA sent to rovideo | 15791470 <i>The e-mail address first; if that is unsuccessful, it will be sent</i> <i>d; if that is unsuccessful, it will be sent via US Mail.</i> 609-734-6817 Brian.Pritchett@Technicolor.com BRIAN J. DORINI, THOMSON LICENSING LLC. 4 RESEARCH WAY, FLOOR 3 | | | |
| Application Number: CORRESPONDENCE DA Fax Number: Correspondence will be using a fax number, if po Phone: Email: Correspondent Name: | ATA sent to rovideo | 15791470 <i>The e-mail address first; if that is unsuccessful, it will be sent</i> <i>d; if that is unsuccessful, it will be sent via US Mail.</i> 609-734-6817 Brian.Pritchett@Technicolor.com BRIAN J. DORINI, THOMSON LICENSING LLC. | | | |
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| Application Number: CORRESPONDENCE DA Fax Number: <i>Correspondence will be</i> <i>using a fax number, if p</i> Phone: Email: Correspondent Name: Address Line 1: Address Line 4: ATTORNEY DOCKET NU | ATA sent to rovideo | 15791470 b the e-mail address first; if that is unsuccessful, it will be sent d; if that is unsuccessful, it will be sent via US Mail. 609-734-6817 Brian.Pritchett@Technicolor.com BRIAN J. DORINI, THOMSON LICENSING LLC. 4 RESEARCH WAY, FLOOR 3 PRINCETON, NEW JERSEY 08540 PU100199 US CNT2 | | | |

i hereby declare that i am the sole inventor (if only one inventor is named below) or one of ______ joint inventors (if plural investors are named below) of the inventions relating to METHODS AND APPARATUS FOR IMPROVED ENTROPHY CODING

| | | | | *************************************** |
|---|-------------|------------------|------------|---|
| described in an Application for Patent filed on | | | | |
| | | under Seriel No. | 61/393.195 | |
| | *********** | | | and described in the file associated work |
| | | | | |

Docket No. date with my execution of this Assignment/Agreement.

date with my execution of this Assignment/Agreement. For valuable consideration received, i hereby sell, assign and transfer to THOMSON LICENSING, a comporation duly organized and existing under the tawe of the country of France, its successors, and assigns my entire right, title and interest, for all countries in and to said inventions, and all the rights and privileges under any and all Letters Pattern that may be granted therefor, and any divisions, continuations, reissues and extensions thereof. I agree that, when requested, i will, without charge to said corporation but at its expense, sign all papers, take all rightful caths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees. I agree that i will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testfy in any legal proceedings, and generally do everything possible to all said corporation, its successors, assigns and legal representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries. I authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in any and legal representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries. I authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in any and all countries.

I authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in my/our name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed in the inventions and to invoke and claim for any application for patent or other form of protection for said inventions filed inventions filed inventions for a successors. the of their own name, or in myour name, in any end all councies and to invoke and calm for any application for patent or other form of protection for said inventions filed by if or them, the benefit of the right of priority provided by the international Convention for the Protection of industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from me. If hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may

be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aforesaid benefits of the right of priority provided by the international Convention for the Protection of industrial Property, as amended, or by any convention which may henceforth be substituted for it.

covenant with THOMSON LICENSING, its successors, assigns, legal representatives, and nominees, that to the best of my knowledge the right, title and interest harein conveyed by me are free and clear of any ancumbrance, and that i have full right to convey the same as herein expressed.

| Signed at | Troy, New York USA | Date | December 3 2010 |
|--|--|--|--|
| inventor (1) | YANG HU (Type of Print) | Zhannananan 🗸 | Yang Alex |
| | st Office Address 285 Sunset Terrad | e. Apt. F-11. | (Signature & Full. No initials.) Troy, New York 12180 USA |
| 1st Witness | Sigi Chen (Type or Print) | | (Signature in Full. No Initials.) |
| 2ndWitness | <u>Tianshu Feng</u> | | (Signature in Full. No Initiale.) Thoms has FOME |
| A REAL PROPERTY AND A REAL | (Type or Print) | ANALAM CONTRACTOR AND A CONTRACT OF A CONTRACT | (Signature in Full. No initiais.) |
| Signed at | La Jolia, California USA | Date | _ |
| inventor (2) | JOEL SOLE | | |
| | (Type or Print) | | (Signature in Fult. No initiais.) |
| Pr | ost Office Address 8722 Villa La Jolla | Drive, Unit 1 | 06, La Jolla, California 92037 USA |
| 1st Wilness | | | |
| | (Type or Print) | 585-500000 VSS | (Signature in Full. No initials.) |
| 2ndWitness | (Type or Profi | | |
| | | | (Signature in Fuil, No initiais.) |
| Signed at | Princeton, New Jersey USA | Date | |
| inventor (3) | XIAOAN LU | | |
| | (Type of Print) | ERENANN TEL | (Signature in Full. No initials.) |
| Po | of Office Address 26 Komments Course | Plufa a fra l | |
| | si Office Address 30 Kennedy Court, | Princeton, N | lew Jersey 08540 |
| 1st Witness | (Type or Print) | datumuna cere | (Signature in Fuil. No initials) |
| 2ndWitness | | | (vignature at FUX, NO RITERS) |
| | (Type or Print) | | (Signature in Full. No mitials.) |

After this Assignment has been recorded please RETURN to:

Patant Operations THOMSON Licensing LLC PO Box 5812 Princeton, NJ 08543-5312

PATENT REEL: 048048 FRAME: 0362

Pat Form Rev. 03/17/2007

thereby declare that i am the sole inventor (if only one inventor is named below) or one of ______ joint inventors (if plural inventors are named below) of the Inventions relating to <u>METHODS AND APPARATUS FOR IMPROVED ENTROPY CODING</u>

described in an Application for Patent filed on October 14, 2010 under Serial No. 61/393,195 and described in the file associated with Docket No.

, listed above or, if not identified here by filing date and serial number or by the Docket Number listed above, executed by me on even date with my execution of this Assignment/Agreement.

For valuable consideration received, I hereby sell, assign and transfer to THOMSON LICENSING, a corporation duly organized and existing under the laws of the country of France, its successors, and assigns my entire right, title and interest, for all countries in and to said inventions, and all the rights and privilegee under any

Intercountry of Platos, ins successors, and assigns my enter right, and and interset, for an countries in and to said invertions, and all testers Patent that may be granted therefor, and any divisions, continuations, releases and axtensions thereof. I agree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees.

I agree that I will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testify in any legal proceedings, and generally do everything possible to aid said corporation, its successors, assigns and legal representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries.

Is authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in my/our name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed Its of that own name, or in myour name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the international Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from me. I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may

be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aloressid benefits of the right of priority provided by the International Convention for the Protection of industrial Property, as amended, or by any convention which may henceforth be substituted for it.

I covenant with THOMSON LICENSING, its successors, assigns, legal representatives, and nominees, that to the best of my knowledge the right, title and interest herein conveyed by me are free and clear of any encombrance, and that I have full right to convey the same as herein expressed.

| Signed at | | Date | |
|--------------|---|-----------------|---|
| Inventor (4) | PENG YIN (Type or Print) | | (Signature in Full. No initials.) |
| | Post Office Address <u>6 John Street, Ithaca, 1</u> | <u>Vew York</u> | · |
| tst Witness | (Type or Print) | | (Signature in Full. No initials.) |
| 2ndWitness | (Type or Print) | | |
| Signed at | San Diego, California USA | Date | (Signature in Full. No initials.) |
| Inventor (6) | YUNFEI ZHENG | | |
| p P | | . S205 S | (Signature in Full. No initials.) an Diego, California 92130 USA |
| 1st Witness | (Type or Pint) | | |
| 2ndWitness | (Type or Print) | - | (Signature in Full. No initials.) |
| Signed at | | Date | (Signaturs in Full, No Initials.) |
| Inventor (6) | | | |
| | (Type or Print) | | (Signature in Full. No initials.) |
| | osi Office Address | | |
| 1st Witness | (Type or Pant) | ****** | (Signature in Full. No initials.) |
| 2ndWitness | (Type or Print) | | (Signature in Full. No initials.) |

After this Assignment has been recorded please RETURN to:

Patent Operations THOMSON Licensing LLC PO Box 5312 Princeton, NJ 08543-5312

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I hereby declare that I am the sole inventor (if only one inventor is named below) or one of ______ joint inventors (if plural inventors are named below) of the inventions relating to METHODS AND APPARATUS FOR IMPROVED ENTROPHY CODING

| | | Concerned of Freezensie Concerned and the | ************************************** | *************** |
|---|------------------|---|--|---|
| described in an Application for Patent filed on | October 14, 2010 | under Serial No. | 61/393,195 | and described in the file associated with |
| | | | | |

Docket No. ____ listed above or, if not identified here by filing date and serial number or by the Docket Number listed above, executed by me on even date with my execution of this Assignment/Agreement

For valuable consideration received, I hereby seli, assign and transfer to THOMSON LICENSING, a corporation duly organized and existing under the laws of the country of France, its successors, and assigns my entire right, title and interest, for all countries in and to said inventions, and all the rights and privileges under any

and all Letters Patient that may be granted therefor, and any divisions, continuations, reisouses in and to sad sivernoirs, and at the referse and all Letters Patient that may be granted therefor, and any divisions, continuations, reisouses and extensions thereof. I agree that, when requested; swill, without charge to said corporation but at its expense, sign as papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees.

I agree that I will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testify in any legal proceedings, and generally do everything possible to aid said corporation, its successors, assigns and legal

corporation and as the expense were testing in any legal processings, and generacy or everything possible to and sec corporation, its successors, assigns and representatives or nominees, to obtain or enforce proper protection for said inventions in any and all countries. i authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in my/our name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the International Convention for the Protection of industrial Property, as amended, or by any convention which

by to mem, as benefit a the fight of promy provided by see international Convention for the Protection of industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from ms. I hereby consent that a copy of this assignment shall be deemed a full legal and format equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nomines to apply for patient or other proper protection for said inventions, and to claim the aforesaid banefits of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

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| Signed at | Troy, New York USA | Date | |
|--------------|--|-------------|---|
| Inventor (1) | YANG HU | | |
| 1 | (sype or Paris) | | (Signature in Full. No initials.) |
| F | Post Office Address 285 Sunset Terrace, | Apt. F-11, | Troy, New York 12180 USA |
| 1st Witness | | | |
| | (Type or Print) | v | (Signature in Full. No initiats) |
| 2ndWitness | | | |
| | (Type or Print) | | (Signature in Full. No initials.) |
| Signed at | La Jolla, California USA | Date | 17. /6 /2010 |
| Inventor (2) | JOEL SOLE | | <u></u> |
| | (Type or Print) | | (Signature & Full: No initials.) |
| с. К | tosi Office Address 8722 Villa La Jolia Di | tive, Unit | 108, La Jolla, California 92037 USA |
| 1st Witness | RAJAN LAXMAN JOSHI | | Rajan lsarman Joshi (Signaturg in Euil No initials.) |
| 2ndWitness | Line GUO | | - Gass (mei |
| | | ***** | (Signature in Fuli. No initials.) |
| Signed at | Princeton, New Jersey USA | Date - | |
| inventor (3) | XIAOAN LU | | |
| | (Type or Print) | | (Signature in Full. No initials.) |
| p | osi Office Address 30 Kennedy Court, Pi | rinceton, I | New Jersey 08540 |
| 1st Witness | | | |
| | (Type or Ptint) | na w | (Signature in Full. No initiats.) |
| 2ndWitness | | | |
| | (Type or Print) | | (Signature in Full. No initials.) |

After this Assignment has been recorded please RETURN to:

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| | | | | ************************************** |
|---|------------------|------------------|------------|---|
| described in an Application for Patent filed on | October 14, 2010 | under Serial No. | 61/393,195 | and described in the file associated with |

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For valuable consideration received, I hereby sell, assign and transfer to THOMSON LICENSING, a corporation duly organized and existing under the laws of the country of France, its successors, and assigns my entire right, title and interest, for all countries in and to said inventions, and all the rights and privileges under any and all Letters Patient that may be granted therefor, and any divisions, continuations, reissues and extensions thereof.

I agree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominees.

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I authorize and empower said corporation, its successors, assigns or nominees, to make application for patent or other form of protection for said inventions in its or their own name, or in my/our name, in any and all countries and to invoke and claim for any application for patent or other form of protection for said inventions filed by it or them, the benefit of the right of priority provided by the international Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it, and to invoke and claim such right of priority without further written or orzit authorization form me.

by to them, we balance of the ngin of priority provided by the memory non-ton be released on mutantar repeny, as americed, or by any convention which may hencelorth be substituted for it, and to invoke and claim such right of priority without further written or oral authorization from me. I hereby consent that a copy of this assignment shall be deemed a full legal and formal equivalent of any assignment, consent to file or like document which may be required in any country for any purpose and more particularly in proof of the right of the said corporation or its successors, assigns or nominees to apply for patent or other proper protection for said inventions, and to claim the aforesaid benefits of the right of priority provided by the International Convention for the Protection of Industrial Property, as amended, or by any convention which may henceforth be substituted for it.

I coverant with THOMSON LICENSING, its successors, assigns, legal representatives, and nominees, that to the best of my knowledge the right, title and interest herein conveyed by me are free and clear of any encumbrance, and that I have tuil right to convey the same as herein expressed.

| Signed at | Ithaca, New York USA | Date |
|--|--|---------------------------------------|
| Inventor (4) | PENG YIN | |
| | (Type or Print) | (Signature in Full. No initials.) |
| (This is a second s | Post Office Address <u>6 John Street, Ithaca, Ne</u> | lew York 14850 |
| 1st Witness | | |
| | (Type or Print) | (Signature in Full. No Initials.) |
| 2ndWitness | | |
| **** | (Type or Print) | (Signature in Full. No initials.) |
| Signed at | San Diego, California USA | Date |
| Inventor (S) | YUNFEI ZHENG | |
| | (Type or Print) | (Signature in Full. No initials.) |
| | Poet Office Address 4615 Torrey Circle, Apt. | S205, San Diego, California 92130 USA |
| 1st Witness | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| 2ndWilness | *************************************** | |
| | (Type or Frint) | (Signature in Full. No initials.) |
| Signed at | | Date |
| Inventor (8) | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| | Post Office Address | |
| 1st Witness | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| 2ndWitness | | |
| | (Type or Print) | (Signature in Full. No initials.) |

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i hereby declare that I am the sole inventor (if only one inventor is named below) or one of ______ joint inventors (if plurat inventors are named below) of the Inventions relating to METHODS AND APPARATUS FOR IMPROVED ENTROPHY CODING

| | ****** | CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC | ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~ | *************************************** |
|---|------------------|--------------------------------------|--|---|
| described in an Application for Patent filed on | October 14, 2010 | under Secial No. | 61/393,195 | and described in the file associated with |
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do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successore, assigns or nominees.

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| Signed at | Troy, New York USA | Oate | |
|--|--|---|-------------------------------------|
| inventor (1) | YANG HU | un: | (Signature in Full. No initials.) |
| ρ | | lpt. F-11 | , Troy, New York 12180 USA |
| 1st Witness | - | | |
| 2ndWitness | (Type or Print) | | (Signature in Full. No Initials.) |
| 21103751019839 | (Type or Print) | | (Signature in Full. No initiais.) |
| Signed at | La Jolia, California USA | Date | |
| Inventor (2) | JOEL SOLE (Type or Print) | • | (Signature in Full, No initials.) |
| P | ost Office Address 8722 Villa La Jolia Dri | ve, Unit | 106, La Jolla, California 92037 USA |
| 1st Wilness | (Type or Print) | • • | (Signature in Full_No initials.) |
| 2ndWitness | (Type or Print) | • • | (Signature in Full, No initials.) |
| Signed at | Princeton, New Jersey USA | Cate | 12.10212010 |
| Inventor (3) | XIAOAN LU (Type or Print) | · . | (Signeture in Full, No initials.) |
| P, | osi Office Agdrees 30 Kennedy Court, Pri | nceton, | New Jersey 08540 |
| tet Witness | Kathleen 4103 | | 1 (Signature in Full. No Initials) |
| 2ndWilness | PATRICIA M. FEDOLOWYEZ | , in the second s | Atries n. Orderway & |
| 1979 Martin and a state of the second second | STATE OF STREET | | (Staneture in Fuil. No mittals.) |

After this Assignment has been recorded please RETURN to:

Patent Operations THOMSON Licensing ULC PO 8ex 5312 Princeton, NJ 08543-5312

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ASSIGNMENT AND AGREEMENT IN AN APPLICATION FOR LETTERS PATENT OF THE UNITED STATES OF AMERICA

I hareby declare that I am the sole inventor (if only one inventor is named below) or one of ______ joint inventors (it plural inventors are named below) of the inventions relating to METHODS AND APPARATUS FOR IMPROVED ENTROPY CODING

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| Signed at | <u>ithaca, New Yo</u> | ork USA | Date | | _ |
|---|---|--|--|-----------------------------------|--------|
| Inventor (4) | PENG VIN | | 00000000000000000000000000000000000000 | | |
| | A Para or P May | | | (Signature in Fish. No initiala.) | ~~~~ |
| n de la constante de la constan | Post Office Address | <u> 6 John Street,</u> | <u>Ithaca, New York</u> | 14850 | |
| 1st Witness | CLOSED DO | | | | |
| | (Type or Print) | | | (Signature in Full. No initials.) | |
| 2ndWitness | APPERTURE COLUMN TO CONTRACTOR | | | | |
| | (Type or Print) | ********* | | (Signature in Full. No initials.) | 410000 |
| Signed at | San Diego, Cal | ifornia USA | Date | | |
| Inventor (6) | YUNFELZHE | | **** | | ULLE |
| | (Type or Print) | | | (Signature in Full. No initials.) | |
| Ś | Cost Office Address | 1615 Torrey Cir | <u>cle, Apt. S205, S</u> | an Diego, California 92130 USA | |
| 1st Witness | | | | | |
| | (Type or Print) | | | (Signaturs in Full. No initials.) | |
| 2ndWitness | | | | | |
| *************** | (Type or Print) | ****** | | (Signature in Full. No initials.) | |
| Signed at | | Contraction of the contraction o | Date | | |
| Inventor (6) | | | | | |
| | (Type or Print) | ****** | | (Signature in Full. No initials.) | |
| | | | | (Signature #) Fuit, 145 #MR86.) | |
| F | ost Office Address | *************************************** | | | |
| 1st Witness | | | | | mark |
| | (Type or Print) | 013130073300000000000000000000000000000 | XXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXXX | (Signature in Full, No Mais) | |
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| | (Type or Print) | *************************************** | ************************************** | (Signature in Fuf. No initials.) | - |

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PATENT REEL: 048048 FRAME: 0366

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ASSIGNMENT AND AGREEMENT IN AN APPLICATION FOR LETTERS PATENT OF THE UNITED STATES OF AMERICA

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| described in an Application for Patent filed on | October 14, 2010 | under Serial No. | AT 18 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 | and described in the file secondated with |

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tenting Fater has may be provided a server, and any arrange, or managers, storage and anti-table attractions and a papers, take all rightful cells, make all rightful declarations and a gree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful cells, make all rightful declarations and do all acts which may be necessary, desirable or convenient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting title thereto in said corporation, its successors, assigns or nominass.

I agree that I will communicate to said corporation or its representatives any facts known to me respecting said inventions and when requested by said corporation and at its expense will testify in any legal proceedings, and generally do everything possible to aid said corporation, its successors, assigns and legal

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| Signed at | Troy, New York USA | Oate | |
|--------------|--|---|--------|
| Inventor (1) | YANG HU (Type or Print) | (Signature in Full, No initi | ak) |
| | Post Office Address 285 Sunset Terrace, | pt. F-11, Troy, New York 12 | |
| 1st Wilness | (Type or Print) | (Signature in Full. No initi | |
| 2ndWitness | (Type or Print) | (Signature in Full. No initi | |
| Signed at | La Jolia, California USA | Date | |
| Inventor (2) | JOEL SOLE | (Signature in Full, No initia | |
| | | e, Unit 106, La Jolla, Califor | ŕ |
| 1st Witness | (Type or Print) | (Signature in Full. No initia | |
| 2ndWitness | (Type or Print) | (Storature in Full. No initia | |
| Signed at | Princeton, New Jersey USA | Date | (rs. / |
| Inventor (3) | XIAOAN LU | | ***** |
| K | (Type or Print) Post Office Address 30 Kennedy Court Br | (Signature in Full. No initia ICOTON, New Jersey 08540 | 15.) |
| fst Witness | | | |
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I agree that, when requested, I will, without charge to said corporation but at its expense, sign all papers, take all rightful oaths, make all rightful declarations and do all acts which may be necessary, desirable or convertient for securing and maintaining patents or other forms of protection for said inventions in any and all countries and for vesting life thereto in said corporation, its successors, assigns or nominees.

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| Signed at | | Date | 12/05/20/0 |
|----------------------|---|-----------|-----------------------------------|
| Inventor (4) | PENG YIN (Type or Print) | *** | (Signature in Full. N4 initials |
| p | ost Office Address 6 John Street, Itheca, | New Yo | |
| 1st Witness | Xino Milly Cas | nn | (Signative of Full, No milling) |
| 2ndWitness | (spe or Pring Cui | • | Conneture in Full. No anitales |
| Signed at | San Diego, California USA | Oate | |
| Inventor (6) | YUNFEI ZHENG | | (Signature in Full, No initials.) |
| P | ost Office Address 4615 Torrey Circle, Ap | nt. S205, | San Diego, California 92130 USA |
| 1st Wilness | (Type or Print) | ~ | (Signature in Full, No initials) |
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| Signed at | | Date | |
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| 1st Witness | (Type or Print) | | (Signature in Full. No initials.) |
| 2ndWitness | (Type or Print) | | (Signature in Full, No initials.) |

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|--------------|---|--|
| Inventor (1) | YANG HU | (Signature in Fulf. Mo initials.) |
| | (Type of Party | (Signature in Fult. No initials.) |
| P | ost Office Address 285 Sunset Terrace, A | pt. F-11, Troy, New York 12180 USA |
| 1st Witness | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| 2ndWitness | | |
| ~~~~~ | (Type or Print) | (Signature in Full. No initials.) |
| Signed at | La Jolla, California USA | Date |
| Inventor (2) | JOEL SOLE | |
| | (Type or Print) | (Signature in Full. No initials.) |
| p. | cel Office Address 8722 Villa La Jolla Driv | ve, Unit 106, La Jolla, California 92037 USA |
| 1st Wilness | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| 2ndWitness | | |
| | (Type or Frint) | (Signature in Full. No initials.) |
| Signed at | Princeton, New Jersey USA | Date |
| Inventor (3) | XIAOAN LU | |
| | (Type or Print) | (Signature in Full. No initials.) |
| P | ost Office Address 30 Kennedy Court, Prin | nceton, New Jersey 08540 |
| 1st Wilness | | |
| | (Type or Print) | (Signature in Full. No initials.) |
| 2ndWitness | | |
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| Signed at | Ilhaca, New York USA | Date - | |
|---------------------------------------|---|-----------------|-----------------------------------|
| inventor (4) | PENG YIN (Type or Print) | | (Signature in Full, No initials.) |
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| 1st Witness | (Type or Print) | | (Signature in Full, No initials.) |
| 2ndWitness | (Type or Print) | | (Signature in Full. No initials.) |
| Signed at | San Diego, California USA | Date | Der. 03, 2010 |
| Inventor (5) | YUNFEI ZHENG | | (Signature in Full. No initiation |
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| 1st Witness | LINEI GUO (Type or Printi) | | (Signature in Full, No initials.) |
| 2nd₩ <u>šnes</u> s | <u>Congria Dei</u> | · iceo | Sgnature in Full/No initials.) |
| Signed at | | Date | |
| inventor (6) | State of Prist} | | |
| p | vet Office Address | | (Signature in Fuit, No withels.) |
| tst Wilness | (Type or Print) | | (Signature in Full. No initials.) |
| 2ndWitness | (Type or Print) | | (Signature in Full. No initials.) |

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