504884896 04/25/2018

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4931637

| SUBMISSION TYPE: | NEW ASSIGNMENT |
|-----------------------|----------------|
| NATURE OF CONVEYANCE: | ASSIGNMENT |

CONVEYING PARTY DATA

| Name | Execution Date |
|--------------------|----------------|
| CHANDAN K. PANKAJ | 04/24/2018 |
| VIJAYKUMAR GOYAL | 04/24/2018 |
| YACINE ARBANI | 04/23/2018 |
| XIAOFENG WANG | 04/23/2018 |
| SANTOSH MALI | 04/24/2018 |
| PATRICK KEVIN KANE | 04/20/2018 |

RECEIVING PARTY DATA

| Name: | BANK OF AMERICA CORPORATION |
|-------------------|-----------------------------|
| Street Address: | MAILCODE: NC1-027-20-05 |
| Internal Address: | 214 NORTH TRYON STREET |
| City: | CHARLOTTE |
| State/Country: | NORTH CAROLINA |
| Postal Code: | 28255 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 15962122 |

CORRESPONDENCE DATA

Fax Number: (214)661-4759

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.

Phone: 2149536759

Email: ptomail1@bakerbotts.com

Correspondent Name: BAKER BOTTS LLP/BANK OF AMERICA CORPORAT

Address Line 1: 2001 ROSS AVENUE

Address Line 2: SUITE 700

Address Line 4: DALLAS, TEXAS 75201

| ATTORNEY DOCKET NUMBER: | 015444.1315 |
|-------------------------|-------------------|
| NAME OF SUBMITTER: | ELIZABETH TURLO |
| SIGNATURE: | /Elizabeth Turlo/ |
| DATE SIGNED: | 04/25/2018 |

504884896 PATENT STANDARD REEL: 045631 FRAME: 0875

| | This document serves as an Oath/Declaration (37 CFR 1.63). |
|----------------------------------|--|
| Total Attachments: 12 | |
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| source=0154441315Asgn#page2.tif | |
| source=0154441315Asgn#page3.tif | |
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| source=0154441315Asgn#page10.tif | |
| source=0154441315Asgn#page11.tif | |
| source=0154441315Asgn#page12.tif | |

COMBINED DECLARATION (37 CFR 1.83) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| Title of Invention | A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE | |
|--|---|--|
| As the below name | ed inventor. Thereby declare that: | |
| This declaration is | | |
| directed to: | ☐ The attached application, or | |
| | United States application or PCT international application number | |
| The above-identific | ed application was made or 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. | |
| | dge that any willful false statement made in this declaration is punishable under 18 U.S.C. prisonment of not more than five (5) years, or both. | |
| : | ASSIGNMENT | |
| Jersey (City, Sta application was f assignment, I an | handan K. Pankaj ("Assignor"), a citizen of India (Country), residing Robbinsville, New ate/Province) have invented the above invention. If the following lines are blank, the above filed on even date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of this assignor below, hereby authorize the attorneys for Bank of America to insert the filing date number below after they become known and prior to filing the recordation. | |
| U.S. Application No. 15/962,122 , filed April 25, 2018 | | |
| | IK OF AMERICA CORPORATION ("Assignee"), a Corporation duly organized under the laws of | |
| 2 | ware, and having its offices and place of business at Charlotte, North Carolina, is desirous of | |
| | ire right, title and interest in and to the aforesaid inventions and in and to all applications and | |
| Letters Patent therefor granted in the United States of America, and in any and all countries foreign thereto: | | |
| including salary o which is hereby a Assignee, its suc the territory of the in space, {includi | DRE, TO WHOM IT MAY CONCERN, be it known that, for good and valuable consideration, or payment for the making of inventions, or employee benefits, the receipt and sufficiency of acknowledged. I said Assignor, by these presents do sell, assign and transfer unto said acessors, assigns and legal representatives, the full and exclusive right, title and interest for a United States of America and all countries foreign thereto, and throughout the world and ing the right to apply for Letters Patent in foreign countries in its own name and to claim any such foreign applications to which such applications are | |

Active 37761612.1

entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Letters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. I hereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patent on said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that I have full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers, make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

WARNING

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PT0-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) ismade in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PT0-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Chandan K. Pankaj Date: 04/24/2018

Signature: (Chandan Pankaj)

Active 37761612.1

COMBINED DECLARATION (37 CFR 1.63) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| Title of A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE | | |
|---|--|--|
| As the below named inventor, I hereby declare that: | | |
| This declaration is directed to: The attached application, or | | |
| ☐ United States application or PCT international application number filed on | | |
| The above-identified application was made or authorized to be made by me. | | |
| Ibelieve that I am the original inventor or an original joint inventor of a claimed invention in the application. | | |
| Thereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. | | |
| WHEREAS, I, Vijaykumar Goyal ("Assignor"), a citizen of India (Country), residing Hightstown, New Jersey (City, State/Province) have invented the above invention. If the following lines are blank, the above application was filed on even date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of this assignment, I an assignor below, hereby authorize the attorneys for Bank of America to Insert the filing date and application number below after they become known and prior to filing the recordation. U.S. Application No. 15/962,122 | | |

Active 37761646.1

entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Letters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. I hereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patent on said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that I have full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers, make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

WARNING

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| LEGAL NAME OF INVENTOR | | |
|---------------------------------|------------------|--|
| Inventor: Vijaykumar Goyal | Date: 04/24/2018 | |
| Signature: <u>1 Vijay Joyal</u> | | |

Active 37761646 1

COMBINED DECLARATION (37 CFR 1.63) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| Title of Invention | A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE | |
|---|--|--|
| As the below name | ed inventor, Thereby declare that: | |
| This declaration is | | |
| directed to: | ☑ The attached application, or | |
| | ☐ United States application or PCT international application number filed on | |
| The above-identified application was made or 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. | |
| Thereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. | | |
| | ASSIGNMENT | |
| WHEREAS, I, Yacine Arbani ("Assignor"), a citizen of United States (Country), residing Doylestown, Pennsylvania (City, State/Province) have invented the above invention. If the following lines are blank, the above application was filed on even date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of this assignment, I an assignor below, hereby authorize the attorneys for Bank of America to insert the filing date and application number below after they become known and prior to filing the recordation. | | |
| U.S. Application No. 15/962,122 filed April 25, 2018 | | |
| WHEREAS, BAN | K OF AMERICA CORPORATION ("Assignee"), a Corporation duly organized under the laws of | |
| the State of Delaware, and having its offices and place of business at Charlotte, North Carolina, is desirous of acquiring the entire right, title and interest in and to the aforesaid inventions and in and to all applications and Letters Patent therefor granted in the United States of America, and in any and all countries foreign thereto: | | |
| NOW, THEREFORE, TO WHOM IT MAY CONCERN, be it known that, for good and valuable consideration, including salary or payment for the making of inventions, or employee benefits, the receipt and sufficiency of which is hereby acknowledged, I said Assignor, by these presents do sell, assign and transfer unto said Assignee, its successors, assigns and legal representatives, the full and exclusive right, title and interest for the territory of the United States of America and all countries foreign thereto, and throughout the world and in space, (including the right to apply for Letters Patent in foreign countries in its own name and to claim any priority rights for such foreign applications to which such applications are | | |
| | | |

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entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Letters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. Thereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patent on said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that Thave full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers, make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

WARNING

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LEGAL NAME OF INVENTOR

Inventor: Yacine Arbani

Signature:

Date: 4 23 2318

Active 37761793.1

COMBINED DECLARATION (37 CFR 1.63) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| Title of Invention | A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE |
|--|--|
| As the below name | ed inventor, I hereby declare that: |
| This declaration is directed to: | ☑ The atlached application, or |
| | United States application or PCT International application number |
| The above-identifi | ed application was made or 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. |
| S: | dge that any willful false statement made in this declaration is punishable under 18 U.S.C. prisonment of not more than five (5) years, or both. |
| | ASSIGNMENT |
| New Jersey (Cit above applicatio this assignment. | aofeng Wang ("Assignor"), a citizen of China (Country), residing Princeton Junction, y, State/Province) have invented the above invention. If the following lines are blank, the n was filed on even date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of I an assignor below, hereby authorize the attorneys for Bank of America to insert the filing tion number below after they become known and prior to filing the recordation. |
| U.S. Application I | No. 15/962,122 filed April 25, 2018 |
| WHEREAS, BAN the State of Delav acquiring the enti Letters Patent th NOW, THEREFO including salary o which is hereby a Assignee, its suc the territory of the in space, {including | KOF AMERICA CORPORATION ("Assignee"), a Corporation duly organized under the laws of vare, and having its offices and place of business at Charlotte, North Carolina, is desirous of re right, title and interest in and to the aforesaid inventions and in and to all applications and erefor granted in the United States of America, and in any and all countries foreign thereto: RE, TO WHOM IT MAY CONCERN, be it known that, for good and valuable consideration, or payment for the making of inventions, or employee benefits, the receipt and sufficiency of acknowledged, I said Assignor, by these presents do sell, assign and transfer unto said cessors, assigns and legal representatives, the full and exclusive right, title and interest for a United States of America and all countries foreign thereto, and throughout the world and ing the right to apply for Letters Patent in foreign countries in its own name and to claim any such foreign applications to which such applications are |

Active 37761741.1

entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Letters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. Thereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patent on said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that I have full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers. make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

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LEGAL NAME OF INVENTOR

Inventor: Xiaofeng Wang

Date: 04/23/2018

Active 37761741.1

COMBINED DECLARATION (37 CFR 1.63) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| Title of invention | A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE | |
|---|---|--|
| As the below nam | As the below named inventor, I hereby declare that: | |
| This declaration is | | |
| directed to: | ☑ The attached application, or | |
| | ☐ United States application or PCT international application number filed on | |
| The above-identifi | ed application was made or 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. | |
| | dge that any willful false statement made in this declaration is punishable under 18 U.S.C. prisonment of not more than five (5) years, or both. | |
| | ASSIGNMENT | |
| State/Province) t was filed on ever an assignor belo | antosh Mali ("Assignor"), a citizen of India (Country), residing Ewing, New Jersey (City, have invented the above invention. If the following lines are blank, the above application a date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of this assignment, I w, hereby authorize the attorneys for Bank of America to insert the filing date and per below after they become known and prior to filing the recordation. | |
| U.S. Application I | No. 15/962,122 filed April 25, 2018 | |
| WHEREAS, BAN the State of Delay acquiring the enti Letters Patent th NOW, THEREFO including salary o which is hereby a Assignee, its suc- the territory of the in space, {including | KOF AMERICA CORPORATION ("Assignee"), a Corporation duly organized under the laws of vare, and having its offices and place of business at Charlotte, North Carolina, is desirous of re-right, title and interest in and to the aforesaid inventions and in and to all applications and erefor granted in the United States of America, and in any and all countries foreign thereto: RE, TO WHOM IT MAY CONCERN, be it known that, for good and valuable consideration, repayment for the making of inventions, or employee benefits, the receipt and sufficiency of acknowledged, I said Assignor, by these presents do sell, assign and transfer unto said bessors, assigns and legal representatives, the full and exclusive right, title and interest for a United States of America and all countries foreign thereto, and throughout the world and ang the right to apply for Letters Patent in foreign countries in its own name and to claim any such foreign applications to which such applications are | |
| | | |

Active 37761823.1

entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Leiters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. I hereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patent on said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that I have full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers, make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

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| LEGAL NAME OF INVENTOR | | |
|------------------------|------------------|--|
| Inventor: Santosh Mali | Date: 04/24/2018 | |
| ZJ. | | |
| Signature: | | |

COMBINED DECLARATION (37 CFR 1.63) AND ASSIGNMENT FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

| | | 20.000 | | | |
|--|--|---|---|--|--|
| | Fitle of Invention | A SYSTEM FOR DYNAMICALLY RENDERING A GRAPHICAL USER INTERFACE | | | |
| 2 | As the below named inventor, I hereby declare that: | | | | |
| - | This declaration is | | | | |
| | directed to: | ☑ The attached application, or | | | |
| | | United States application or PCT international application number | | | |
| The above-identified application was made or 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. | | | | | |
| | Thereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both. | | | | |
| ASSIGNMENT | | | | | |
| | WHEREAS, I, Patrick Kevin Kane ("Assignor"), a citizen of United States (Country), residing Hillsborough, New Jersey (City, State/Province) have invented the above invention. If the following lines are blank, the above application was filed on even date herewith, otherwise, to comply with 37 C.F.R. §3.21 for recordal of this assignment, I an assignor below, hereby authorize the attorneys for Bank of America to insert the filing date and application number below after they become known and prior to filing the recordation. | | | | |
| | U.S. Application f | No. 15/962,122 filed April 25, 2018 | | | |
| | WHEREAS, BANK OF AMERICA CORPORATION ("Assignee"), a Corporation duly organized under the laws of the State of Delaware, and having its offices and place of business at Charlotte, North Carolina, is desirous of acquiring the entire right, title and interest in and to the aforesaid inventions and in and to all applications and Letters Patent therefor granted in the United States of America, and in any and all countries foreign thereto: | | | | |
| | including salary or which is hereby a Assignee, its succ the territory of the in space, {including | ORE, TO WHOM IT MAY CONCERN, be it known that, for good and valuable consideration, or payment for the making of inventions, or employee benefits, the receipt and sufficiency of acknowledged, I said Assignor, by these presents do sell, assign and transfer unto said accessors, assigns and legal representatives, the full and exclusive right, title and interest for the United States of America and all countries foreign thereto, and throughout the world and ing the right to apply for Letters Patent in foreign countries in its own name and to claim an such foreign applications to which such applications are | d | | |

Active 37761851.1

entitled under international conventions, treaties, or otherwise), in and to said inventions and in and to all applications and Letters Patent granted therefor, and all non-provisionals, divisionals, reissues, reexaminations, continuations, continuation-in-parts and extensions thereof, and in and to all copyrights, trademarks with their associated goodwill, trade secrets, confidential information, and compilations, necessary or useful to make, use, or sell the inventions. I hereby authorize and request the Commissioner of Patents, and any official whose duty it is to issue patents, to issue all Letters Patenton said inventions or resulting therefrom to said Assignee, or its successors and assigns, as assignee of the entire right, title and interest. I represent and warrant that I have full right to agree to, execute, and deliver this assignment. I agree that I will without further consideration, but at the expense of Assignee, communicate to said Assignee, or its successors, assigns, or nominees, any and all facts known to me regarding said inventions whenever requested, and that I will execute all non-provisional, divisional, reissue, reexamination, continuation and continuation-in-part applications, testify in any legal proceedings, sign all lawful papers, make all rightful oaths, and generally do everything reasonable for said Assignee, its successors, assigns, and nominees, to obtain and enforce proper patent protection for said inventions in all countries.

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| LEGAL NAME OF INVENTOR | | | | |
|------------------------|--------------------|------------------------|--|--|
| Inventor: Patr | rick Kevin Kane | Date: <u>4/20/2018</u> | | |
| Signature: | Patrick Kevin Kans | | | |

Active 37761851.1

PATENT REEL: 045631 FRAME: 0888

RECORDED: 04/25/2018