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| PATENT ASSIGNMENT COVER SHEET |
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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| DEVANG R. PAREKH | 02/22/2016 |
| FENG CAO | 02/24/2016 |
| HENRY H. FUNG | 02/25/2016 |
| LOUIS ODDO | 02/23/2016 |
| WILLIAM PARSONS | 02/24/2016 |
| MITESHKUMAR K. PATEL | 02/29/2016 |
| RECEIVING PARTY DATA | |
| Name: | NORTHROP GRUMMAN SYSTEMS CORPORATION |
| Street Address: | 2980 FAIRVIEW PARK DRIVE |
| City: | FALLS CHURCH |
| State/Country: | VIRGINIA |
| Postal Code: | 22042-4511 |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 15059953 |
| CORRESPONDENCE DATA | |
| Fax Number: | (216)621-4072 |
| <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> | |
| Phone: | 216.621.2234 |
| Email: | rkline@tarolli.com |
| Correspondent Name: | TAROLLI, SUNDHEIM, COVELL & TUMMINO |
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| ATTORNEY DOCKET NUMBER: | NG(ST)024633 US PRI |
| NAME OF SUBMITTER: | CHRISTOPHER P. HARRIS |
| SIGNATURE: | /Christopher P Harris/ |
| DATE SIGNED: | 03/03/2016 |

Total Attachments: 6

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ASSIGNMENT

WHEREAS, I, Devang R. Parekh, together with Feng Cao, Henry H. Fung, Louis Oddo, William Parsons and Miteshkumar K. Patel, hereinafter referred to as Assignor have jointly invented certain new and useful improvements in 4D TEMPORAL DATA STRUCTURES FOR VISUALIZATION OF ALTERNATIVE UNMANNED VEHICLE TRAJECTORIES OVER TIME, described in an application for United States Letters Patent, executed by me on the date as stated below;

WHEREAS, Northrop Grumman Systems Corporation, a Delaware corporation, having its principal place of business at 2980 Fairview Park Drive, Falls Church, VA 22042-4511, United States of America, hereinafter referred to as Assignee, is desirous of acquiring the entire right, title and interest in, to and under said improvements and said application;

NOW, THEREFORE, in consideration of Assignor's obligations to Northrop Grumman Systems Corporation, and for other good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, Assignor has sold, assigned, transferred and set over, and by these presents does hereby sell, assign, transfer and set over, unto Assignee, its successors, legal representatives and assigns, Assignor's entire right, title and interest in, to and under said improvements, and said application and all divisions, renewals, continuations, and continuations-in-part thereof, and all United States Letters patent that may be granted thereon and all reissues and extensions thereof, and all applications for Letters Patent that may hereafter be filed for said improvements in any country or countries foreign to the United States, including the full right to claim for any such application the priority benefits of the International Convention for the Protection of Industrial Property and other priority-conferring treaties, and all Letters Patent that may be granted for said improvements in any country or countries foreign to the United States and all extensions, divisions, continuations, continuations-in-part, renewals and reissues thereof; and Assignor hereby authorizes and requests the Commissioner of Patents and Trademarks of the United States, and any official of any country or countries foreign to the United States, whose duty it is to issue patents on applications as aforesaid, to issue all Letters Patent for said improvements to said Assignee, its successors, legal representatives and assigns, in accordance with the terms of this instrument;

Assignor hereby acknowledges that at the time of making the improvements herein identified, Assignor was under an obligation to assign to Assignee, Assignor's entire right, title and interest in, to and under said improvements;

Assignor hereby covenants that Assignor has full right to convey the interest herein assigned, and that Assignor has not executed, and will not execute, any agreement in conflict herewith and that Assignee, Northrop Grumman Systems Corporation, its successors, assigns and other legal representatives shall have the right to hold and enjoy for its and their own use and benefit, to the end of the term or terms for which such Letters Patent shall or may be granted, reissued or extended as fully and completely as the same right could have been held and enjoyed by Assignor had this Assignment not been made.

Assignor hereby further covenants and agrees to communicate to Assignee, its successors, legal representatives and assigns, any and all facts known to Assignor respecting said improvements; to promptly provide Assignee with all documents relating to said improvements, said invention, and said Letters Patent as may be known or accessible to Assignor; to testify as to the same in any interference or litigation or other legal proceedings related thereto; to sign all lawful papers, execute all extensions, continuations, continuations-in-part, divisional and reissue applications; and to make all rightful oaths or declarations and generally do everything possible to aid Assignee, its successors, legal representatives and assigns in obtaining and enforcing all the rights herein conveyed for said improvements in all countries without further compensation, but at the expense of Assignee, its successors, legal representatives and assigns.

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 22nd day of February, 2016, and has executed the referenced patent application on the 22nd day of February, 2016.
Devang R. Parekh
DEVANG R. PAREKH

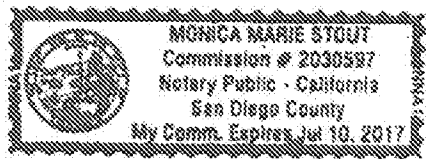
A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
COUNTY OF San Diego) ss Monica Marie Stout

On February 22, 2016 before me, Lorna L. Schott, Notary Public, personally appeared Devang R. Parekh, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/hers/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.
[Signature]
Notary's Signature



(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 24 day of February, 2016, and has executed the referenced patent application on the 24 day of February, 2016.
Feng Cao
FENG CAO

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss
COUNTY OF San Diego)

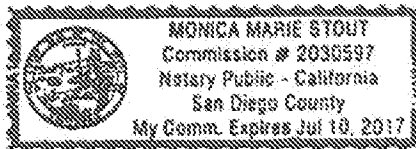
Monica Marie Stout

On February 24, 2016 before me, Lorna L. Schott, Notary Public, personally appeared Feng Cao, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Signature]
Notary's Signature



(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this _____ day of _____, 2016, and has executed the referenced patent application on the _____ day of _____, 2016.

Henry H. Fung
HENRY H. FUNG

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STATE OF CALIFORNIA)
) ss
COUNTY OF _____)

On _____, 2016 before me, Lorna L. Schott, Notary Public, personally appeared Henry H. Fung, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary's Signature

(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this _____ day of _____, 2016, and has executed the referenced patent application on the _____ day of _____, 2016.

FENG CAO

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss
COUNTY OF _____)

On _____, 2016 before me, Lorna L. Schott, Notary Public, personally appeared Feng Cao, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary's Signature

(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 25 day of Feb, 2016, and has executed the referenced patent application on the 25 day of Feb, 2016.

[Handwritten Signature]
HENRY H. FUNG

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

STATE OF CALIFORNIA)
) ss
COUNTY OF San Diego) *Monica Marie Stout*

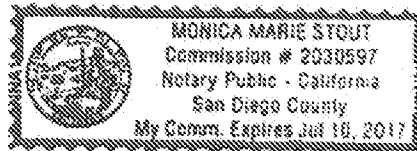
On FEBRUARY 25, 2016 before me, ~~Lorna L. Schott~~, Notary Public, personally appeared Henry H. Fung, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Handwritten Signature]

Notary's Signature



(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 23rd day of February, 2016, and has executed the referenced patent application on the 23rd day of February, 2016.
Louis Oddo
LOUIS ODDO

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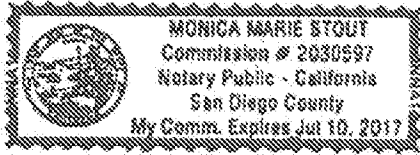
STATE OF CALIFORNIA)
) ss
COUNTY OF San Diego) *Monica Marie Stout*

On February 23, 2016 before me, Loma L. Schott, Notary Public, personally appeared Louis Oddo, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Monica Marie Stout
Notary's Signature



(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this _____ day of _____, 2016, and has executed the referenced patent application on the _____ day of _____, 2016.

WILLIAM PARSONS

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STATE OF CALIFORNIA)
) ss
COUNTY OF _____)

On _____, 2016 before me, Loma L. Schott, Notary Public, personally appeared William Parsons, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary's Signature

(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this _____ day of _____, 2016, and has executed the referenced patent application on the _____ day of _____, 2016.

LOUIS ODDO

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STATE OF CALIFORNIA)
) ss
COUNTY OF _____)

On _____, 2016 before me, Lorna L. Schott, Notary Public, personally appeared Louis Oddo, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Notary's Signature

(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 24th day of February, 2016, and has executed the referenced patent application on the 24th day of February, 2016.
William Parsons
WILLIAM PARSONS

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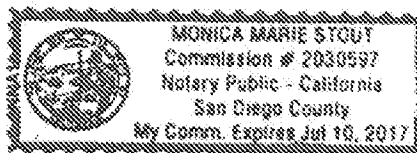
STATE OF CALIFORNIA)
) ss
COUNTY OF San Diego) Monica Marie Stout

On February 24, 2016 before me, ~~Lorna L. Schott~~, Notary Public, personally appeared William Parsons, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/~~she~~/they executed the same in his/~~her~~/their authorized capacity(~~ies~~), and that by his/~~her~~/their signature(~~s~~) on the instrument to be the person(~~s~~) or the entity upon behalf of which the person(~~s~~) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

[Signature]
Notary's Signature



(SEAL)

IN WITNESS WHEREOF, the undersigned has executed and delivered this instrument this 29 day of February, 2016, and has executed the referenced patent application on the 29 day of February, 2016.

Mitesh K. Patel
MITESHKUMAR K. PATEL

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

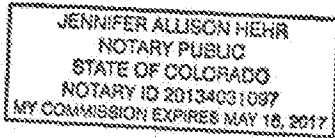
STATE OF COLORADO)
) ss
COUNTY OF Apache)

On 29th February, 2016 before me, Jennifer Hehr, Notary Public, personally appeared Miteshkumar K. Patel, proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to this instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument to be the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of Colorado that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Jennifer Hehr
Notary's Signature



(SEAL)