PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT5537936

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

CONVEYING PARTY DATA

| Name | Execution Date |
|------------------------|----------------|
| ASHEESH BHARDWAJ | 05/16/2019 |
| WILLIAM FRANKLIN LEVEN | 05/16/2019 |
| SON HUNG TRAN | 05/16/2019 |
| TIMOTHY DAVID ANDERSON | 05/16/2019 |

RECEIVING PARTY DATA

| Name: | TEXAS INSTRUMENTS INCORPORATED |
|-------------------|--------------------------------|
| Street Address: | 12500 TI BOULEVARD |
| Internal Address: | MS 3999 |
| City: | DALLAS |
| State/Country: | TEXAS |
| Postal Code: | 75243 |

PROPERTY NUMBERS Total: 1

| Property Type | Number |
|---------------------|----------|
| Application Number: | 16420467 |

CORRESPONDENCE DATA

Fax Number: (214)567-2228

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: 2144791308
Email: uspto@ti.com
Correspondent Name: KENNY LIU
Address Line 1: PO BOX 655474

Address Line 2: MS 3999

Address Line 4: DALLAS, TEXAS 75265

| ATTORNEY DOCKET NUMBER: | TI-90136 |
|-------------------------|-----------------|
| NAME OF SUBMITTER: | GERALD E LAWS |
| SIGNATURE: | /Gerald E Laws/ |
| DATE SIGNED: | 05/23/2019 |
| | • |

Total Attachments: 2

PATENT REEL: 049268 FRAME: 0693

505491132

source=TI-90136-ASG#page1.tif source=TI-90136-ASG#page2.tif

> PATENT REEL: 049268 FRAME: 0694

ASSIGNMENT

WHEREAS, I, the undersigned inventor (or one of the undersigned joint inventors), of residence as listed, having invented certain new and useful improvements as below entitled, for which application for United States Letters Patent is made.

WHEREAS, TEXAS INSTRUMENTS INCORPORATED, a corporation organized and existing under the laws of the State of Delaware, with a place of business at 12500 TI Boulevard - M/S 3999, Dallas, Texas 75243, is desirous of acquiring my entire right, title and interest in and to the said invention, and to the said application and any Letters Patent that may issue thereon.

NOW, THEREFORE, for good and valuable consideration, the receipt of which is hereby acknowledged, I hereby sell and assign unto the said TEXAS INSTRUMENTS INCORPORATED, its successors and assigns, my entire right, title and interest in and to the said invention and in and to the said application(s) and all patents which may be granted therefor, and all divisions, reissues, substitutions, continuations, and extensions thereof; and I hereby authorize and request the Patent and Trademark Office to issue all patents for said invention, or patents resulting therefrom, to the said TEXAS INSTRUMENTS INCORPORATED, as assignee of my entire right, title and interest.

I also hereby sell and assign to TEXAS INSTRUMENTS INCORPORATED, its successors and assigns, my corresponding rights to the invention disclosed in said application in all other countries of the world, including the right to claim priority, file applications and obtain patents under the terms of the Paris Convention for the Protection of Industrial Property, and further agree to execute any and all patent applications, assignments, affidavits, and any other papers in connection therewith necessary to perfect such rights.

I hereby further agree that I will communicate to said TEXAS INSTRUMENTS INCORPORATED, or to its successors, assigns, and legal representatives, any facts known to me respecting said invention, and at the expense of said assignee company, testify in any legal proceedings, sign all lawful papers, execute all divisional, continuation, reissue and substitute applications, make all lawful oaths, and generally do everything possible to aid said TEXAS INSTRUMENTS INCORPORATED, its successors, assigns and nominees to obtain and enforce proper patent protection for said invention in all countries.

I authorize the later insertion of the nonprovisional application number and filing date herein below.

IN WITNESS WHEREOF, I hereunto set hand and seal this day and year,

| TITLE | Inserting Null Vectors into a Str | | |
|-----------------------------------|-----------------------------------|-------------|--------------|
| NONPROVISIONAL APPLICATION NO. | 16/420,467 | FILING DATE | May 23, 2019 |

| SIGNATURE OF INVENTOR | LE Lodies C |
|-------------------------------|------------------|
| PRINTED NAME OF INVENTOR | Asheesh Bhardwaj |
| DATE | 5/16/2019 |
| RESIDENCE (CITY AND STATE) | Allen, TX |

PATENT REEL: 049268 FRAME: 0695

| William Franklin Leven |
|------------------------|
| 05-16-2017 |
| Dallas, TX |
| |
| Son Hung Tran |
| 5-16-2-019 |
| Murphy, TX |
| Time Dail And |
| Timothy David Anderson |
| 5/6/19 |
| University Park, TX |
| |

After recording, return Assignment to:

Texas Instruments Incorporated PO Box 655474, M/S 3999 Dallas, TX 75265

PATENT REEL: 049268 FRAME: 0696

RECORDED: 05/23/2019