PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1 Stylesheet Version v1.2 EPAS ID: PAT4332538

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	ASSIGNMENT

CONVEYING PARTY DATA

Name	Execution Date
SARMA VRUDHULA	02/28/2017
JOSEPH DAVIS	03/22/2017
NIRANJAN KULKARNI	03/22/2017
AYKUT DENGI	02/28/2017

RECEIVING PARTY DATA

Name:	ARIZONA BOARD OF REGENTS ON BEHALF OF ARIZONA STATE UNIVERSITY
Street Address:	1475 NORTH SCOTTSDALE ROAD
Internal Address:	SKYSONG - SUITE 200
City:	SCOTTSDALE
State/Country:	ARIZONA
Postal Code:	85257

PROPERTY NUMBERS Total: 1

Property Type	Number	
Application Number:	15390970	

CORRESPONDENCE DATA

Fax Number: (877)812-1249

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: 919-238-2300 Email: jalkove@wt-ip.com

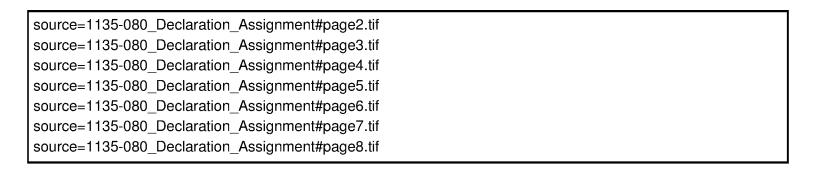
Correspondent Name: WITHROW & TERRANOVA, P.L.L.C. Address Line 1: 106 PINEDALE SPRINGS WAY Address Line 4: CARY, NORTH CAROLINA 27511

ATTORNEY DOCKET NUMBER:	1135-080
NAME OF SUBMITTER:	JENNIFER ALKOVE
SIGNATURE:	/Jennifer Alkove/
DATE SIGNED:	03/23/2017

Total Attachments: 8

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PATENT REEL: 041696 FRAME: 0124



PATENT REEL: 041696 FRAME: 0125

Title of	METHOD OF OBFUSCATING DIGITAL LOGIC CIRCUITS USING
Invention	THRESHOLD VOLTAGE
As the below named	l inventor, I hereby declare that:
This declaration is o	lirected to: The attached application; or United States application or PCT international application number 15/390,970, filed on 12/27/2016.
The above-identified	d application is made or authorized to be made by me.
I believe that I am that application.	ne original inventor or an original joint inventor of a claimed invention in the
•	ge that any willful false statement made in this declaration is punishable under 18 or imprisonment of not more than five (5) years, or both.

WHEREAS, <u>Arizona Board of Regents on behalf of Arizona State University</u>, having a principal place of business at 1475 North Scottsdale Road, SkySong – Suite 200, Scottsdale, Arizona 85257 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, title, and interest in and to said invention as described in the specification executed by me concurrently herewith, and any and all Letters Patent which shall be granted therefor.

NOW, THEREFORE, To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have sold, assigned, transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire right, title and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations, continuations-in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and enjoyed by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent above-mentioned and that the same are unencumbered, and that I have good right and lawful authority to sell and convey the same in the manner herein set forth.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, learned in the law, shall advise that an amendment, division, continuation, continuation-in-part, or substitution of, or any other proceeding in connection with said application, including interference proceedings, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or

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for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

Date: 2/28/2017

IN WITNESS WHEREOF, I hereunto set my hand and seal.

LEGAL NAME OF INVENTOR

Inventor: Sarma Vrudhula Date:
Signature: Sauna Vrudhula

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Title of Invention	METHOD OF OBFUSCATING DIGITAL LOGIC CIRCUITS USING THRESHOLD VOLTAGE
	d inventor, I hereby declare that:
This declaration is	directed to: The attached application; or United States application or PCT international application number 15/390,970, filed on 12/27/2016.
The above-identific	ed application is made or authorized to be made by me.
I believe that I am application.	the original inventor or an original joint inventor of a claimed invention in the
I hereby acknowled U.S.C. 1001 by fin	dge that any willful false statement made in this declaration is punishable under 18 e or imprisonment of not more than five (5) years, or both.

WHEREAS, Arizona Board of Regents on behalf of Arizona State University, having a principal place of business at 1475 North Scottsdale Road, SkySong — Suite 200, Scottsdale, Arizona 85257 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, title, and interest in and to said invention as described in the specification executed by me concurrently herewith, and any and all Letters Patent which shall be granted therefor.

NOW, THEREFORE, To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have sold, assigned, transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire right, title and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations, continuations-in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and enjoyed by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent above-mentioned and that the same are unencumbered, and that I have good right and lawful authority to sell and convey the same in the manner herein set forth.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, learned in the law, shall advise that an amendment, division, continuation, continuation-in-part, or substitution of, or any other proceeding in connection with said application, including interference proceedings, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or

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for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

IN WITNESS WHEREOF, I hereunto set my hand and seal.

LEGAL NAME OF INVENTOR

Inventor: Joseph Davis

Signature:

Date: $\frac{3}{2} \frac{2}{17}$

2

Title of Invention	METHOD OF OBFUSCATING DIGITAL LOGIC CIRCUITS USING THRESHOLD VOLTAGE
As the below name	l inventor, I hereby declare that:
This declaration is	directed to: The attached application; or United States application or PCT international application number 15/390,970, filed on 12/27/2016.
The above-identific	d application is made or authorized to be made by me.
I believe that I am tapplication.	he original inventor or an original joint inventor of a claimed invention in the
I hereby acknowled	ge that any willful false statement made in this declaration is punishable under 18

WHEREAS, Arizona Board of Regents on behalf of Arizona State University, having a principal place of business at 1475 North Scottsdale Road, SkySong – Suite 200, Scottsdale, Arizona 85257 (hereinafter referred to as "ASSIGNEE"), is desirous of acquiring the entire right, title, and interest in and to said invention as described in the specification executed by me concurrently herewith, and any and all Letters Patent which shall be granted therefor.

U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

NOW, THEREFORE, To All Whom It May Concern, be it known that for good and valuable consideration, the receipt and sufficiency of which is hereby acknowledged, I, the said assignor, have sold, assigned, transferred and set over unto the said ASSIGNEE, its successors and assigns, the entire right, title and interest in and to the above-mentioned application and invention and in and to any and all Letters Patent of the United States which may hereafter be granted therefor, and in any and to any and all continuations, continuations-in-part, substitutions, divisions or reissues of said Letters Patent, the same to be held and enjoyed by the said ASSIGNEE, for its interest, and for its own use and behalf, and the use and behalf of its successors and assigns, to the full end of the term for which said Letters Patent may be granted as fully and entirely as the same would have been held and enjoyed by me had this assignment and sale not been made.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that at the time of the execution and delivery of these presents I am a joint and lawful owner of the entire right, title and interest in and to the invention, application and Letters Patent above-mentioned and that the same are unencumbered, and that I have good right and lawful authority to sell and convey the same in the manner herein set forth.

And for the consideration aforesaid, I hereby covenant and agree to and with the said ASSIGNEE, its successors and assigns, that I will, whenever its counsel or the counsel of its successors and assigns, learned in the law, shall advise that an amendment, division, continuation, continuation-in-part, or substitution of, or any other proceeding in connection with said application, including interference proceedings, is lawful and desirable, sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for the procurement of valid Letters Patent for said invention, or

PATENT REEL: 041696 FRAME: 0130 for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

I hereby request the Commissioner for Patents to issue the Letters Patent in accordance with this instrument.

For the consideration aforesaid, I have sold, assigned, transferred and set over, and by these presents do sell, assign, transfer and set over, unto the said ASSIGNEE, its successors, assigns or nominee, the entire right, title and interest in and to any and all Letters Patent for said invention which may be granted in countries foreign to the United States and in and to any applications for Letters Patent which may be filed for said invention in countries foreign to the United States and in and to the invention described in said application; and I hereby authorize and empower the said ASSIGNEE, its successors, assigns or nominees to apply for Letters Patent or other form of protection on said invention in its own name or in the name of its successor, assignee, or nominee, in any and all countries where it may desire to file such application and where said application may be filed by another than the inventor; and I hereby covenant and agree to sign all papers and drawings, take all rightful oaths, and do all acts necessary or required to be done for procurement of Letters Patent, or other form of protection, for said invention or inventions in countries foreign to the United States, and for further investing or confirming the right and title therein to the ASSIGNEE, its successors, assignee, or nominee, without charge to the said ASSIGNEE, its successor, assignee or nominee, but at its or their expense.

IN WITNESS WHEREOF, I hereunto set my hand and seal.

LEGAL NAME OF INVENTOR

Inventor: Niranjan Kulkarni	Date: _	3/22/	2017
Signature:			

METHOD OF ORFUSCATING DIGITAL LOGIC CIRCUITS USING

Title of

A TOWN OF	MEDITAL OF COURT OF MANUAL MANUAL CONTROL OF COURT OF COU				
Invention	THRESHOLD VOLTAGE				
As the below named	l inventor, I hereby declare that:				
This declaration is d	lirected to: The attached application; or United States application or PCT international application number 15/390,970, filed on 12/27/2016.				
The above-identified	d application is made or authorized to be made by me.				
I believe that I am that application.	ne original inventor or an original joint inventor of a claimed invention in the				
I hereby 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.					

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for the reissue of the same without charge to the said ASSIGNEE, its successors or assigns, but at its or their expense.

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IN WITNESS WHEREOF, I hereunto set my hand and seal.

T.	FCAL	. NA	MR.	ORI	NV	\mathbf{RNT}	OR.

Inventor: <u>Aykı</u>	ıt Dengi	Date: 2/28/17	
Signature:	anglutilengs	······································	