

PATENT ASSIGNMENT

Electronic Version v1.1

Stylesheet Version v1.1

SUBMISSION TYPE:	NEW ASSIGNMENT												
NATURE OF CONVEYANCE:	ASSIGNMENT												
CONVEYING PARTY DATA													
<table border="1"> <thead> <tr> <th>Name</th> <th>Execution Date</th> </tr> </thead> <tbody> <tr> <td>Paul Russell FRIEND</td> <td>04/04/2013</td> </tr> <tr> <td>Qi CHEN</td> <td>04/04/2013</td> </tr> <tr> <td>Hong CHANG</td> <td>04/04/2013</td> </tr> <tr> <td>Daniel Dale MORRIS</td> <td>04/04/2013</td> </tr> <tr> <td>Jodi Seaborn GRAF</td> <td>04/05/2013</td> </tr> </tbody> </table>		Name	Execution Date	Paul Russell FRIEND	04/04/2013	Qi CHEN	04/04/2013	Hong CHANG	04/04/2013	Daniel Dale MORRIS	04/04/2013	Jodi Seaborn GRAF	04/05/2013
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Daniel Dale MORRIS	04/04/2013												
Jodi Seaborn GRAF	04/05/2013												
RECEIVING PARTY DATA													
Name:	Caterpillar Inc.												
Street Address:	100 N.E. Adams Street												
City:	Peoria												
State/Country:	ILLINOIS												
Postal Code:	61629-9510												
PROPERTY NUMBERS Total: 1													
<table border="1"> <thead> <tr> <th>Property Type</th> <th>Number</th> </tr> </thead> <tbody> <tr> <td>Application Number:</td> <td>13857670</td> </tr> </tbody> </table>		Property Type	Number	Application Number:	13857670								
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CORRESPONDENCE DATA													
Fax Number:	2024084400												
<i>Correspondence will be sent via US Mail when the fax attempt is unsuccessful.</i>													
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ATTORNEY DOCKET NUMBER:	08350.1055-00000												
NAME OF SUBMITTER:	Jeremy P. Bond												

OP \$40.00 13857670

Signature:	/Jeremy P. Bond/
Date:	04/05/2013
Total Attachments: 5 source=08350_1055_Assignment#page1.tif source=08350_1055_Assignment#page2.tif source=08350_1055_Assignment#page3.tif source=08350_1055_Assignment#page4.tif source=08350_1055_Assignment#page5.tif	

ASSIGNMENT

WHEREAS We, the below named inventors, hereinafter referred to as Assignors, have made an invention entitled:

MOTION ESTIMATION UTILIZING RANGE DETECTION-ENHANCED VISUAL ODOMETRY

for which We will or have filed a patent application; and

WHEREAS, Caterpillar Inc., a corporation of Delaware whose post office address is 100 N.E. Adams Street, Peoria, IL 61629-9510 (hereinafter referred to as Assignee), is desirous of securing the entire right, title, and interest in and to this invention, and in and to the patent application for this invention and any and all patents to be issued upon this application throughout the world;

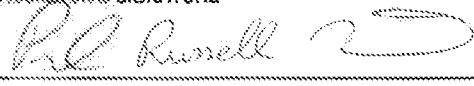
NOW THEREFORE, be it known that for good and valuable consideration the receipt of which from Assignee is hereby acknowledged, We, as Assignors, have sold, assigned, transferred, and set over, and do hereby sell, assign, transfer, and set over unto the Assignee, its lawful successors and assigns, my/our entire right, title, and interest in and to this invention, provisional application Serial No. _____, filed _____, and this application, and all divisions, and continuations thereof, and all patents which may be granted thereon, and all reissues thereof, as well as all rights to claim priority in any country or jurisdiction or patent office on the basis of this application, and all applications for patents which may hereafter be filed for this invention in any country or jurisdiction or patent office and all patents which may be granted on this invention in any country or jurisdiction or patent office, and all extensions, renewals, and reissues thereof; and We hereby authorize and request any official of any country or jurisdiction or patent office whose duty it is to issue patents on applications as described above, to issue all patents for this invention to Assignee, its successors and assigns, in accordance with the terms of this Assignment;

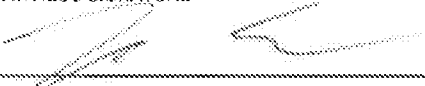
AND, WE HEREBY covenant that We have the full right to convey the interest assigned by this Assignment, and I/We have not executed and will not execute any agreement in conflict with this Assignment;


AND, WE HEREBY further covenant and agree that We will, without further consideration, communicate with Assignee, its successors and assigns, any facts known to me/us respecting this invention, and testify in any legal proceeding, sign all lawful papers when called upon to do so, execute and deliver any and all papers that may be necessary or desirable to perfect the title to this invention in said Assignee, its successors or assigns, execute all divisional, continuation, and reissue applications, make all rightful oaths and generally do everything possible to aid Assignee, its successors and assigns, to obtain and enforce proper patent protection for this invention in any country or jurisdiction or patent office, it being understood that any expense incident to the execution of such papers shall be borne by the Assignee, its successors and assigns;

AND, WE HEREBY authorize Assignee or the attorneys/representatives of Assignee to insert here in parentheses the country, application number, and official filing date (United States Application No. 13/857670 filed April 5, 2013).

IN TESTIMONY WHEREOF, I/We have hereunto set our hands.


1. FULL NAME OF SOLE OR FIRST ASSIGNOR Paul Russell FRIEND	ASSIGNOR'S SIGNATURE 	DATE 4/4/2013
ADDRESS 718 N Oregon Avenue Morton, IL 61550		CITIZENSHIP U.S.A.

1. WITNESS NAME TIM EJANS	WITNESS SIGNATURE 	DATE 4/4/2013
ADDRESS 5504 Broomfield St EDWARDS IL 61528		CITIZENSHIP USA.

2. WITNESS NAME THANDAVA EDARA	WITNESS SIGNATURE 	DATE 04/04/2013
ADDRESS 1800 W Marigold Dr, # 7105 Peoria, IL 61615		CITIZENSHIP India

2. FULL NAME OF SECOND ASSIGNOR QI CHEN	ASSIGNOR'S SIGNATURE 	DATE 4/4/2013
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1. WITNESS NAME TIM EJANS	WITNESS SIGNATURE 	DATE 4/4/2013
ADDRESS 5504 BROOMFIELD ST EDWARDS IL 61528		CITIZENSHIP USA.

2. WITNESS NAME THANDAVA EDARA	WITNESS SIGNATURE 	DATE 04/04/2013
ADDRESS 1800 W Marigold Dr, # 7105 Peoria, IL 61615		CITIZENSHIP India

3. FULL NAME OF THIRD ASSIGNOR Hong CHANG	ASSIGNOR'S SIGNATURE <i>Hongchang</i>	DATE 04/04/2013
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1. WITNESS NAME <i>Kaimi Sun</i>	WITNESS SIGNATURE <i>Kaimi Sun</i>	DATE April 4, 2013
ADDRESS 5611 N Sherwood Ave. Peoria, IL 61614		CITIZENSHIP Chinese

2. WITNESS NAME <i>TIM EVANS</i>	WITNESS SIGNATURE <i>Tim Evans</i>	DATE 04/04/2013
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4. FULL NAME OF FOURTH ASSIGNOR Daniel Dale MORRIS	ASSIGNOR'S SIGNATURE	DATE
ADDRESS 1337 Shady Avenue Pittsburgh, PA 15217		CITIZENSHIP U.S.A.

1. WITNESS NAME	WITNESS SIGNATURE	DATE
ADDRESS		CITIZENSHIP


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ADDRESS		CITIZENSHIP

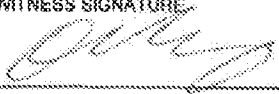
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ADDRESS 10716 Collett Drive Peoria, IL 61615		CITIZENSHIP U.S.A.

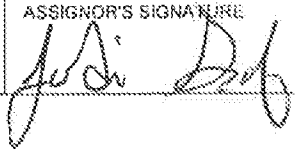
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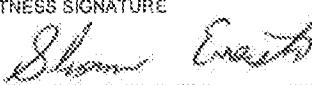
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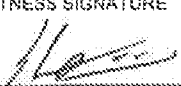
4. FULL NAME OF FOURTH ASSIGNOR Daniel Dale MORRIS	ASSIGNOR'S SIGNATURE 	DATE 4-5-13
ADDRESS 1337 Shady Avenue Pittsburgh, PA 15217		CITIZENSHIP U.S.A.

1. WITNESS NAME Peter Lawton	WITNESS SIGNATURE 	DATE 4/5/2013
ADDRESS 44 Warren St. #5 Pittsburgh, PA 15205		CITIZENSHIP USA

2. WITNESS NAME Qi Wang	WITNESS SIGNATURE 	DATE 4/5/2013
ADDRESS 5615 Hempstead Rd. Apt 03, Pittsburgh, PA 15217		CITIZENSHIP China

5. FULL NAME OF FIFTH ASSIGNOR Jodi Seaborn GRAF	ASSIGNOR'S SIGNATURE 	DATE 4-5-2013
ADDRESS 1007 Willow Vale Drive Seabrook, TX 77586-4009		CITIZENSHIP U.S.A.

1. WITNESS NAME Shonn Everett	WITNESS SIGNATURE 	DATE 4-5-2013
ADDRESS 838 Prairie Brook Ct Houston, Tx 77062		CITIZENSHIP USA

2. WITNESS NAME SHAUN AZIMI	WITNESS SIGNATURE 	DATE 4-5-2013
ADDRESS 15703 LAKE LODGE DR. HOUSTON, TX 77062		CITIZENSHIP USA