

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
Stylesheet Version v1.2

EPAS ID: PAT5480439

SUBMISSION TYPE:	NEW ASSIGNMENT
NATURE OF CONVEYANCE:	DOCUMENTS EVIDENCING OWNERSHIP
CONVEYING PARTY DATA	
Name	Execution Date
CHRISTOPHER ZACH	03/27/2019
RECEIVING PARTY DATA	
Name:	TOSHIBA RESEARCH EUROPE LIMITED
Street Address:	CAMBRIDGE RESEARCH LABORATORY
Internal Address:	208 CAMBRIDGE SCIENCE PARK, MILTON ROAD
City:	CAMBRIDGE
State/Country:	UNITED KINGDOM
Postal Code:	CB4 0GZ
PROPERTY NUMBERS Total: 1	
Property Type	Number
Application Number:	15653158
CORRESPONDENCE DATA	
Fax Number:	(703)413-2220
<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:	(703) 413-3000
Email:	hcho@oblon.com
Correspondent Name:	OBLON, ET AL.
Address Line 1:	1940 DUKE STREET
Address Line 4:	ALEXANDRIA, VIRGINIA 22314
ATTORNEY DOCKET NUMBER:	505661US
NAME OF SUBMITTER:	HYUN CHO
SIGNATURE:	/Hyun Cho/
DATE SIGNED:	04/18/2019
Total Attachments: 12	
source=505661USownershipAssignment#page1.tif	
source=505661USownershipAssignment#page2.tif	
source=505661USownershipAssignment#page3.tif	
source=505661USownershipAssignment#page4.tif	
source=505661USownershipAssignment#page5.tif	

source=505661USownershipAssignment#page6.tif
source=505661USownershipAssignment#page7.tif
source=505661USownershipAssignment#page8.tif
source=505661USownershipAssignment#page9.tif
source=505661USownershipAssignment#page10.tif
source=505661USownershipAssignment#page11.tif
source=505661USownershipAssignment#page12.tif

DOCKET NO: 505661US

IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
STEPHAN LIWICKI, ET AL. : EXAMINER: CHANG. JON CARLTON
SERIAL NO: 15/653,158 :
FILED: JULY 18, 2017 : GROUP ART UNIT: 2665
FOR: CAMERA POSE ESTIMATING
METHOD AND SYSTEM

DECLARATION OF MR. TATSUYA IZUHA

I, Mr. Tatsuya Izuha declare that

1. I am the Deputy Managing Director of the Computer vision Group for Toshiba Research Europe Limited.
2. All statements made herein of my own knowledge are true and all statements made on information and belief are believed to be true.
3. Dr. Christopher Zach and Dr. Stephan Liwicki are the inventors of the inventions disclosed and claimed in U.S. application serial no. 15/653,158.
4. Dr. Christopher Zach is a former employee of Toshiba Research Europe Limited.
5. Dr. Stephan Liwicki is still employed by Toshiba Research Europe Limited
6. The inventions disclosed and claimed in U.S. application serial no. 15/653,158 were conceived by Dr. Christopher Zach and Dr. Stephan Liwicki during their employment tenure with Toshiba Research Europe Limited. The inventions were within the scope of their employment and reached during employment hours and using the resources of Toshiba Research Europe Limited.

7. Dr. Christopher Zach and Dr. Stephan Liwicki have employment agreements with Toshiba Research Europe Limited under which they assigned their rights Toshiba Research Europe Limited which predate any other assignment. A copy of a letter of termination, describing such obligations and acknowledged by Dr. Christopher Zach, is attached as Exhibit 1 hereto.

8. Dr. Christopher Zach and his co-inventor, Dr. Stephan Liwicki, inadvertently executed an assignment with a typographical error in the name of the assignee. The assignee was incorrectly identified as Kaisha Kaisha Toshiba. This appears to have been a typographical error in an attempt to name Kabushiki Kaisha Toshiba, the parent company of Toshiba Research Europe Limited, as assignee. Toshiba Research Europe Limited is unaware of any company having the name Kaisha Kaisha Toshiba. The correct name of the assignee, as indicated above, should be Toshiba Research Europe Limited.

9. The erroneous assignment was recorded with the United States Patent and Trademark office at Reel/Frame no. 043619 / 0361. A copy of the erroneous assignment is attached as Exhibit 2.

10. The error was discovered subsequent to filing.

11. Dr. Stephan Liwicki has signed a substitute corrective assignment identifying the correct assignee as Toshiba Research Europe Limited. That corrective assignment is being filed simultaneously with this declaration and is also attached hereto as Exhibit 3.


12. Dr. Christopher Zach has subsequently left the employment of Toshiba Research Europe Limited, and his whereabouts are unknown despite repeated attempts to contact him using his last known address and contact information.

13. Toshiba Research Europe Limited respectfully requests that the United States Patent and Trademark Office record U.S. application serial no. 15/653,158 as having been assigned to Toshiba Research Europe Limited.

14. I have been informed that willful false statement are punishable by fine or imprisonment, or both and could jeopardize the validity of the application or any patent issuing thereon.

I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

Executed on 27/3/2019
[Date]


Mr. Tatsuya Izuha

TOSHIBA RESEARCH EUROPE LIMITED

CAMBRIDGE RESEARCH LABORATORY

208 CAMBRIDGE SCIENCE PARK, MILTON ROAD, CAMBRIDGE, CB4 0GZ, UK
TELEPHONE: 01223 436900 FAX: 01223 436909
INTERNATIONAL +44 1223-436900 INTERNATIONAL +44 1223-436909

Dr Christopher Zach
31 Pearl Close
Cambridge
CB4 1QD

2 May 2018

Dear Chris

As you are aware, the conditions of your contract of employment with TREL/CRL comprise the terms and conditions outlined in your letter of appointment dated 1 January 2017, together with Sections A, B, C and D of the Company's Employment Handbook. Section C of the Handbook describes the Company's confidentiality and IPR policies and these are repeated hereunder for your convenience.

Disclosure of information and other Restrictions

The following clauses and sub-clauses are and will remain enforceable following the termination of employment howsoever arising:

In the normal course of employment with the Company, employees may have access to and be entrusted with information as to the policy, organisation and management, finance, know-how, technical data, Intellectual Property (as defined below), future plans and staffing, supplies, clients and customers of the Company and other information which is identified as confidential ("Information"); all of which Information is confidential unless it is in the public domain, provided that it is not so by reason of a breach of any obligation of confidence by any person. To protect the confidentiality of this Information and without prejudice to every other duty which every employee has to keep secret information given to him or gained in confidence from any source, including suppliers, clients and customers, each employee agrees:

- " i) Not at any time, whether during or following employment with the Company, (unless expressly authorised by the Company in writing or as a necessary part of the performance of duties hereunder) to disclose to any person or to make use of any Information save that after the employment ceases and provided the employee has returned to the Company all records and other property in accordance with clause 3(iii) below, this obligation shall apply only in respect of any Information

which has been specifically identified or marked as confidential or proprietary or which is of a trade secret character or the disclosure or use of which could do material harm to the Company or which is confidential to any third party.

- ii) Without limiting the generality of any other obligations, after the termination of employment, however arising, either on his own, or with or on behalf of any other person, firm or company, not to make use of any Information for any business activity competitive with that of the Company.
- iii) To deliver to the Company before the end of employment, or if that employment ends without notice, immediately after its end, all documents, records, discs, papers and any other property of the Company, including photocopies or machine readable copies belonging to the Company which are in his possession, either on Company premises or elsewhere, as well as any items in any media made or held in the course of employment and relating to the affairs of the Company.
- iv) Not at any time to make any copy in any media, abstract, summary or précis of the whole or any part of any document or record belonging to the Company, except when required to do so in the course of employment, in which event the copy, abstract, summary or précis shall belong to the Company and shall likewise be delivered up to the Company on termination of employment.

“Intellectual Property” shall mean innovations, ideas, inventions, discoveries, improvements, enhancements, know-how, trade marks (which may or may not be registered and which may include any trade, brand or business name and get-up, devices and logos), designs (whether registered or not), rights in domain names, database rights, copyright material (including without limitation all rights in and to technical processes, systems, methods, software design, algorithms, code, scripts, texts or other computer software, and typographical rights) or other industrial or intellectual property subsisting in any country of the world and all applications and the right to apply for any of the above in any country of the world.

7 **“Company Intellectual Property”** shall mean Intellectual Property made, created or discovered by the employee during his employment (whether or not in the course of the employment, or during the normal hours of work, or using the facilities of the Company) which

- (a) in any way affects or relates to the business of the Company; or
- (b) is capable of being used or adapted for use in or in connection with such business, or,
- (c) in relation to which the employee has used know-how or information acquired by him during the course of his employment, or the facilities of the Company.

- 8 The employee acknowledges that he may make, create or discover Intellectual Property in the course of his duties and agrees that in this respect he has a special obligation to further the interests of the Company.
- 9 The employee irrevocably and unconditionally waives, and agrees to waive, all moral rights under the Copyright Designs and Patents Act 1988 in connection with his authorship of any existing or future copyright work made or created by him during his employment which comprises Company Intellectual Property.
- 10 The employee will disclose to the Company in writing full details of all Company Intellectual Property promptly following its making, creation or discovery.
- 11 The employee agrees that any Company Intellectual Property shall belong to, and shall be the absolute property of, the Company upon its creation or discovery and
- (a) to the extent that the Company Intellectual Property does not automatically belong to the Company upon creation or discovery, the employee undertakes to hold any such Company Intellectual Property upon trust for the sole benefit of the Company until such time as it shall be vested absolutely in the Company; and
 - (b) the employee hereby assigns to the Company with full title guarantee by way of present and future assignment all such Company Intellectual Property.
- 12 If and when required to do so by the Company the employee shall, at the expense of the Company, as the Company may direct:
- (a) give and supply to the Company all such information, data, drawings and provide such assistance as the Company may require to use, exploit or otherwise deal with the Company Intellectual Property;
 - (b) apply to join with the Company in applying for patents or other protection or registration in the United Kingdom and in any other part of the world for the Company Intellectual Property; and
 - (c) do all such acts and execute all such documents as may reasonably be required for the purpose of vesting in the Company absolutely, or the Company acquiring, maintaining and enforcing, any Company Intellectual Property promptly as requested, by the Company. This applies both during the employee's employment and after it ceases, for whatever reason.
- 13 The rights and obligations under clauses 9, 10, 11, and 12 shall continue in force after termination of the employee's employment in respect of the Company Intellectual Property.

Nothing in clauses 6-13 shall be construed as restricting the employee's rights under sections 39 (detailed below) to 43 Patents Act 1977 if applicable.

Patents Act 1977 section 39:

(1) Notwithstanding anything in any rule of law, an invention made by an employee shall, as between him and his employer, be taken to belong to his employer for the purposes of this Act and all other purposes if -

(a) it was made in the course of the normal duties of the employee or in the course of duties falling outside his normal duties, but specifically assigned to him, and the circumstances in either case were such that an invention might reasonably be expected to result from the carrying out of his duties; or

(b) the invention was made in the course of the duties of the employee and, at the time of making the invention, because of the nature of his duties and the particular responsibilities arising from the nature of his duties he had a special obligation to further the interests of the employer's undertaking.

(2) Any other invention made by an employee shall, as between him and his employer, be taken for those purposes to belong to the employee.

A Manager, Research Scientist or Research Engineer shall not at any time, whether during his employment or for a period of 12 months after its termination induce, solicit, entice or endeavour to entice away from the Company whether on his own account or with or on behalf of any other person, firm or company, any person who was a Senior Employee of the Company at any time during the 12 months prior to the termination of his employment. For the purpose of this paragraph, Senior Employee shall mean any Research Scientist in the Quantum Information Group or Advanced Research Project or Research Engineer in the Speech Technology Group and any member of the Company's management. "

Although you acknowledged receipt of the updated Handbook effective 1 January 2013 and accepted the terms of the revised Handbook, because you are terminating your employment with TREL I should be grateful if you would re-confirm your commitment to the above important conditions by signing and returning to me one copy of this letter.

Yours sincerely



Mr Tatsuya Izuha
Deputy Managing Director
Cambridge Research Laboratory

I acknowledge receipt of the written particulars concerning disclosure of information and IPR contained in this letter and confirm that I will continue to be bound by them after the termination of my employment with TREL. I confirm that I will return to the Company all documents, records, discs, papers etc. in accordance with iii) above.

Signed: Christopher Zach

Date: July 25, 2018

Print name: CHRISTOPHER ZACH

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

Title of Invention	CAMERA POSE ESTIMATING METHOD AND SYSTEM
<p>As the below named inventor, I hereby declare that:</p> <p>This declaration <input type="checkbox"/> The attached application, or</p> <p>is directed to: <input checked="" type="checkbox"/> United States application or PCT international application number <u>15/653,158</u> filed on <u>July 18, 2017</u></p> <p>The above-identified application was made or authorized to be made by me.</p> <p>I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.</p> <p>WHEREAS, <u>KAISHA KAISHA TOSHIBA</u> (hereinafter referred to as "ASSIGNEE") having places of business at: <u>1-1, Shibaura 1-chome, Tokyo, Japan</u>, is desirous of acquiring the entire right, title and interest in and to said invention and in and to any Letters Patent that may be granted therefore in the United States and its territorial possessions and in any and all foreign countries;</p> <p>NOW, THEREFORE, in consideration of the sum of FIVE DOLLARS (\$5.00), the receipt whereof is hereby acknowledged, and for other good and valuable consideration, I, by these presents do sell, assign and transfer unto said ASSIGNEE, the full and exclusive right to the said invention in the United States and its territorial possessions and in all foreign countries (including the right to claim priority under the terms of the International Convention and other relevant International Treaties and Arrangements from the aforesaid application) and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States and its territorial possessions and in any and all foreign countries and in and to any and all divisions, reissues, continuations, substitutions and renewals thereof.</p> <p>I hereby authorize and request the Patent Office Officials in the United States and its territorial possessions and any and all foreign countries to issue any and all of said Letters Patent, when granted, to said ASSIGNEE as the assignee of my entire right, title and interest in and to the same, for the sole use and behoof of said ASSIGNEE, its (his) 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 by me had this Assignment and sale not been made.</p> <p>Further, I agree that I will communicate to said ASSIGNEE or its (his) representatives any facts known to me respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal and reissue applications, execute all necessary assignment papers to cause any and all of said Letters Patent to be issued to said ASSIGNEE, make all rightful oaths, and, generally do everything possible to aid said ASSIGNEE, its (his) successors and assigns, to obtain and enforce proper protection for said invention in the United States and its territorial possessions and in any and all foreign countries.</p> <p>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.</p>	
LEGAL NAME OF INVENTOR	
Inventor: <u>Stephan LIWICKI</u>	Date: <u>311 8/2017</u>
Signature: <u><i>liwicki</i></u>	

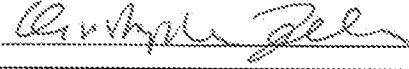
OBLON, McCLELLAND, MAIER & NEUSTADT, L.L.P.
 ATTORNEYS AT LAW
 1940 DUKE STREET
 ALEXANDRIA, VIRGINIA 22314

Exhibit 2

Page #1

PATENT
REEL: 048940 FRAME: 0847

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

Title of Invention	CAMERA POSE ESTIMATING METHOD AND SYSTEM
As the below named inventor, I hereby declare that:	
This declaration <input type="checkbox"/> The attached application, or	
is directed to: <input checked="" type="checkbox"/> United States application or PCT international application number <u>15/653,158</u> filed on <u>July 18, 2017</u>	
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.	
WHEREAS, <u>KAISHA KAISHA TOSHIBA</u> (hereinafter referred to as "ASSIGNEE") having places of business at: <u>1-1, Shibaura 1-chome, Tokyo, Japan</u> , is desirous of acquiring the entire right, title and interest in and to said invention and in and to any Letters Patent that may be granted therefore in the United States and its territorial possessions and in any and all foreign countries;	
NOW, THEREFORE, in consideration of the sum of FIVE DOLLARS (\$5.00), the receipt whereof is hereby acknowledged, and for other good and valuable consideration, I, by these presents do sell, assign and transfer unto said ASSIGNEE, the full and exclusive right to the said invention in the United States and its territorial possessions and in all foreign countries (including the right to claim priority under the terms of the International Convention and other relevant International Treaties and Arrangements from the aforesaid application) and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States and its territorial possessions and in any and all foreign countries and in and to any and all divisions, reissues, continuations, substitutions and renewals thereof.	
I hereby authorize and request the Patent Office Officials in the United States and its territorial possessions and any and all foreign countries to issue any and all of said Letters Patent, when granted, to said ASSIGNEE as the assignee of my entire right, title and interest in and to the same, for the sole use and behoof of said ASSIGNEE, its (his) 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 by me had this Assignment and sale not been made.	
Further, I agree that I will communicate to said ASSIGNEE or its (his) representatives any facts known to me respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal and reissue applications, execute all necessary assignment papers to cause any and all of said Letters Patent to be issued to said ASSIGNEE, make all rightful oaths, and, generally do everything possible to aid said ASSIGNEE, its (his) successors and assigns, to obtain and enforce proper protection for said invention in the United States and its territorial possessions and in any and all foreign countries.	
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.	
LEGAL NAME OF INVENTOR	
Inventor: <u>Christopher ZACH</u>	Date: <u>23/8/2012</u>
Signature: 	

OBLON, McCLELLAND, MAIER & NEUSTADT, L.L.P.
ATTORNEYS AT LAW
1940 DUKE STREET
ALEXANDRIA, VIRGINIA 22314

505661US

Substitute Assignment

This assignment has been executed to correct the Assignee's name on the previously filed Assignment for the assignment recorded at Reel 043619, Frame 0361.

Assignment of Application

INSERT NAMES AND RESIDENCE ADDRESS OF THE INVENTORS:

WHEREAS, I (WE) Stephan LIWICKI and Christopher ZACH

INSERT TITLE OF INVENTION:

_____, respectively, have invented certain new and useful improvements in: CAMERA POSE ESTIMATING METHOD AND SYSTEM

(Application No. 15/653,158, filed July 18, 2017), and

INSERT NAME OF COMPANY OR OTHER ASSIGNEE

WHEREAS, Toshiba Research Europe limited (hereinafter referred to as "ASSIGNEE") having a place of business at: Cambridge Research Laboratory, 208 Cambridge Science Park, Milton Road, Cambridge, CB4 0GZ, United Kingdom is desirous of acquiring the entire right, title and interest in and to said invention and in and to any Letters Patent that may be granted therefore in the United States and its territorial possessions and in any and all foreign countries;


NOW, THEREFORE, in consideration of the sum of FIVE DOLLARS (\$5.00), the receipt whereof is hereby acknowledged, and for other good and valuable consideration, I (WE), by these presents do sell, assign and transfer unto said ASSIGNEE, the full and exclusive right to the said invention in the United States and its territorial possessions and in all foreign countries (including the right to claim priority under the terms of the International Convention and other relevant International Treaties and Arrangements from the aforesaid application(s)) and the entire right, title and interest in and to any and all Letters Patent which may be granted therefor in the United States and its territorial possessions and in any and all foreign countries and in and to any and all divisions, reissues, continuations, substitutions and renewals thereof.

I (WE) hereby authorize and request the Patent Office Officials in the United States and its territorial possessions and any and all foreign countries to issue any and all of said Letters Patent, when granted, to said ASSIGNEE as the assignee of my (our) entire right, title and interest in and to the same, for the sole use and behoof of said ASSIGNEE, its (his) 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 by me (us) had this Assignment and sale not been made.

07/09

Further, I (WE) agree that I (WE) will communicate to said ASSIGNEE or its (his) representatives any facts known to me (us) respecting said invention, and testify in any legal proceeding, sign all lawful papers, execute all divisional, continuation, substitute, renewal and reissue applications, execute all necessary assignment papers to cause any and all of said Letters Patent to be issued to said ASSIGNEE, make all rightful oaths, and, generally do everything possible to aid said ASSIGNEE, its (his) successors and assigns, to obtain and enforce proper protection for said invention in the United States and its territorial possessions and in any and all foreign countries.

The undersigned hereby grant(s) the firm of Oblon, McClelland, Maier & Neustadt, L.L.P. of 1940 Duke Street, Alexandria, Virginia 22314 the power to insert on this assignment any further identification, including the application number and filing date, which may be necessary or desirable in order to comply with the rules of the United States Patent and Trademark Office for recordation of this document.

Date: 1210312013 
(Signature of Inventor) Stephan LIWICKI

Date: _____
(Signature of Inventor) Christopher ZACH

OBLON, McCLELLAND, MAIER & NEUSTADT, L.L.P.
ATTORNEYS AT LAW
1940 DUKE STREET
ALEXANDRIA, VIRGINIA 22314

07/09

Exhibit 3

Page #2

RECORDED: 04/18/2019

PATENT
REEL: 048940 FRAME: 0850