

## PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1  
 Stylesheet Version v1.2

EPAS ID: PAT6532123

<b>SUBMISSION TYPE:</b>	NEW ASSIGNMENT
<b>NATURE OF CONVEYANCE:</b>	ASSIGNMENT
<b>CONVEYING PARTY DATA</b>	
<b>Name</b>	<b>Execution Date</b>
HASAN ALDIABAT	11/07/2020
EMAD S. EBBINI	11/03/2020
DALONG LIU	01/28/2021
PARKER O'BRIEN	11/03/2020
<b>RECEIVING PARTY DATA</b>	
<b>Name:</b>	REGENTS OF THE UNIVERSITY OF MINNESOTA
<b>Street Address:</b>	600 MCNAMARA ALUMNI CENTER
<b>Internal Address:</b>	200 OAK STREET SE
<b>City:</b>	MINNEAPOLIS
<b>State/Country:</b>	MINNESOTA
<b>Postal Code:</b>	55455-2020
<b>PROPERTY NUMBERS Total: 1</b>	
<b>Property Type</b>	<b>Number</b>
<b>Application Number:</b>	16202992
<b>CORRESPONDENCE DATA</b>	
<b>Fax Number:</b>	(612)305-1228
<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>	
<b>Phone:</b>	6123052476
<b>Email:</b>	dschurmann@mrgs.com
<b>Correspondent Name:</b>	MARK A. HOLLINGSWORTH
<b>Address Line 1:</b>	MUETING RAASCH GROUP
<b>Address Line 2:</b>	111 WASHINGTON AVE S, SUITE 700
<b>Address Line 4:</b>	MINNEAPOLIS, MINNESOTA 55401
<b>ATTORNEY DOCKET NUMBER:</b>	0110.000582US01
<b>NAME OF SUBMITTER:</b>	DEB SCHURMANN
<b>SIGNATURE:</b>	/Deb Schurmann/
<b>DATE SIGNED:</b>	02/03/2021
<b>Total Attachments: 12</b>	

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UNIVERSITY OF MINNESOTA  
**ASSIGNMENT**

WHEREAS, I, Hasan Aldiabat, have invented certain new and useful inventions in ADAPTIVE REFOCUSING OF ULTRASOUND TRANSDUCER ARRAYS USING IMAGE DATA, for which applications for Letters Patents of the United States have been made, said applications being filed as follows: Provisional application no. 62/591,308 on November 28, 2017; and Utility application no. 16/202,992 on November 28, 2018 (the "Application(s)");

WHEREAS, REGENTS OF THE UNIVERSITY OF MINNESOTA ("Assignee"), having offices at 600 McNamara Alumni Center, 200 Oak Street SE, Minneapolis, Minnesota 55455-2020, is desirous of documenting the acquisition of the entire right, title and interest in and to said invention, said Application(s) and in, to and under any and all Letters Patent to be obtained therefor;

WHEREAS, I hereby acknowledge an obligation of assignment of the inventions disclosed in the Application(s) to Assignee at the time the invention(s) was made;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, and to the extent that I have not done so already via a prior agreement with the Assignee, or if I have already done so via a prior agreement with the Assignee then in confirmation of said prior agreement, I have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Assignee, its successors and assigns, the entire right, title and interest in and to the inventions set forth hereinabove and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefor on the Application(s) including rights of priority under the Paris Convention for the Protection of Industrial Property and the European Patent Convention, and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Application(s) and Letters Patent that may be granted, including all rights to claim priority therefrom, and specifically including the right to enforce such Letters Patent in the name of Assignee and to recover damages for past infringement of the rights conveyed herein, the same to be held and enjoyed by Assignee for its own use and benefit and use and benefit 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.

I hereby authorize said Assignee, its successors and assigns, or anyone it may properly designate, to apply for Letters Patent, in its own name if desired, in any and all foreign countries, and additionally to claim the filing date of any the Application(s) and/or otherwise take advantage of all rights of priority created by said Application(s) under any treaty relating thereto (including the right to claim priority to said patent application, e.g., under the provisions of the Paris Convention for the Protection of Industrial Property and the European Patent Convention).

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

Upon said consideration I do hereby covenant and agree with said Assignee, its successors and assigns, that I will not execute in writing or do any act whatsoever conflicting with these presents, and that I or my executors or administrators will at any time upon request, without further or additional consideration, but at the expense of said Assignee, its successors and assigns, execute such additional writings and do such additional acts as said Assignee, its successors and assigns, may deem necessary or desirable to perfect the Assignee's enjoyment of this grant, and render all necessary assistance in making application for and obtaining original, divisional, reissues or extended Letters Patent of the United States, or of any and all foreign countries on said invention, and in enforcing any rights occurring as a result of such application or patents, by giving testimony in any proceedings or transactions involving such applications or patents.

I hereby request the Honorable Commissioner of Patents and Trademarks to issue the Letters Patent to Assignee in accordance with this instrument.

I have hereunto set my hand on November 7, 2020 12:15 AM CST.

DocuSigned by:


/Hasan Aldiabat /  
FCE55908177E405...

Hasan Aldiabat

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

IN WITNESS WHEREOF, I have hereunto set my hand on  
January 28, 2021 | 1:08 PM CST \_\_\_\_\_, on behalf of Assignee Regents of the University of  
Minnesota accepting this assignment.

REGENTS OF THE UNIVERSITY OF MINNESOTA

DocuSigned by:  
  
OFB835187311411...

Carol Grutkoski  
Chief of Staff and Operations Manager  
per Presidential Delegation ID\_257866

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018



UNIVERSITY OF MINNESOTA  
**ASSIGNMENT**

WHEREAS, I, Emad S. Ebbini, have invented certain new and useful inventions in ADAPTIVE REFOCUSING OF ULTRASOUND TRANSDUCER ARRAYS USING IMAGE DATA, for which applications for Letters Patents of the United States have been made, said applications being filed as follows: Provisional application no. 62/591,308 on November 28, 2017; and Utility application no. 16/202,992 on November 28, 2018 (the "Application(s)");

WHEREAS, REGENTS OF THE UNIVERSITY OF MINNESOTA ("Assignee"), having offices at 600 McNamara Alumni Center, 200 Oak Street SE, Minneapolis, Minnesota 55455-2020, is desirous of documenting the acquisition of the entire right, title and interest in and to said invention, said Application(s) and in, to and under any and all Letters Patent to be obtained therefor;

WHEREAS, I hereby acknowledge an obligation of assignment of the inventions disclosed in the Application(s) to Assignee at the time the invention(s) was made;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, and to the extent that I have not done so already via a prior agreement with the Assignee, or if I have already done so via a prior agreement with the Assignee then in confirmation of said prior agreement, I have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Assignee, its successors and assigns, the entire right, title and interest in and to the inventions set forth hereinabove and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefor on the Application(s) including rights of priority under the Paris Convention for the Protection of Industrial Property and the European Patent Convention, and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Application(s) and Letters Patent that may be granted, including all rights to claim priority therefrom, and specifically including the right to enforce such Letters Patent in the name of Assignee and to recover damages for past infringement of the rights conveyed herein, the same to be held and enjoyed by Assignee for its own use and benefit and use and benefit 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.

I hereby authorize said Assignee, its successors and assigns, or anyone it may properly designate, to apply for Letters Patent, in its own name if desired, in any and all foreign countries, and additionally to claim the filing date of any the Application(s) and/or otherwise take advantage of all rights of priority created by said Application(s) under any treaty relating thereto (including the right to claim priority to said patent application, e.g., under the provisions of the Paris Convention for the Protection of Industrial Property and the European Patent Convention).

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

Upon said consideration I do hereby covenant and agree with said Assignee, its successors and assigns, that I will not execute in writing or do any act whatsoever conflicting with these presents, and that I or my executors or administrators will at any time upon request, without further or additional consideration, but at the expense of said Assignee, its successors and assigns, execute such additional writings and do such additional acts as said Assignee, its successors and assigns, may deem necessary or desirable to perfect the Assignee's enjoyment of this grant, and render all necessary assistance in making application for and obtaining original, divisional, reissues or extended Letters Patent of the United States, or of any and all foreign countries on said invention, and in enforcing any rights occurring as a result of such application or patents, by giving testimony in any proceedings or transactions involving such applications or patents.

I hereby request the Honorable Commissioner of Patents and Trademarks to issue the Letters Patent to Assignee in accordance with this instrument.

I have hereunto set my hand on November 3, 2020 | 5:01 PM CST.

DocuSigned by:

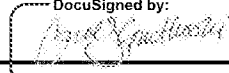
/Emad S. Ebbini /  
66518AD40D4640A...

Emad S. Ebbini

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

IN WITNESS WHEREOF, I have hereunto set my hand on  
January 28, 2021 | 1:08 PM CST \_\_\_\_\_, on behalf of Assignee Regents of the University of  
Minnesota accepting this assignment.

REGENTS OF THE UNIVERSITY OF MINNESOTA

DocuSigned by:  
  
0FB835187311411...

Carol Grutkoski  
Chief of Staff and Operations Manager  
per Presidential Delegation ID\_257866

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018





UNIVERSITY OF MINNESOTA  
**ASSIGNMENT**

WHEREAS, I, Dalong Liu, have invented certain new and useful inventions in ADAPTIVE REFOCUSING OF ULTRASOUND TRANSDUCER ARRAYS USING IMAGE DATA, for which applications for Letters Patents of the United States have been made, said applications being filed as follows: Provisional application no. 62/591,308 on November 28, 2017; and Utility application no. 16/202,992 on November 28, 2018 (the "Application(s)");

WHEREAS, REGENTS OF THE UNIVERSITY OF MINNESOTA ("Assignee"), having offices at 600 McNamara Alumni Center, 200 Oak Street SE, Minneapolis, Minnesota 55455-2020, is desirous of documenting the acquisition of the entire right, title and interest in and to said invention, said Application(s) and in, to and under any and all Letters Patent to be obtained therefor;

WHEREAS, I hereby acknowledge an obligation of assignment of the inventions disclosed in the Application(s) to Assignee at the time the invention(s) was made;

NOW, THEREFORE, to all whom it may concern, be it known that for good and valuable consideration, the receipt and sufficiency whereof is hereby acknowledged, and to the extent that I have not done so already via a prior agreement with the Assignee, or if I have already done so via a prior agreement with the Assignee then in confirmation of said prior agreement, I have sold, assigned, transferred and set over and by these presents do sell, assign, transfer and set over unto Assignee, its successors and assigns, the entire right, title and interest in and to the inventions set forth hereinabove and the entire right, title and interest in and to any and all Letters Patent of the United States and any foreign countries which may be granted therefor on the Application(s) including rights of priority under the Paris Convention for the Protection of Industrial Property and the European Patent Convention, and in and to any and all extensions, divisions, continuations, continuations-in-part or reissues of said Application(s) and Letters Patent that may be granted, including all rights to claim priority therefrom, and specifically including the right to enforce such Letters Patent in the name of Assignee and to recover damages for past infringement of the rights conveyed herein, the same to be held and enjoyed by Assignee for its own use and benefit and use and benefit 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.


I hereby authorize said Assignee, its successors and assigns, or anyone it may properly designate, to apply for Letters Patent, in its own name if desired, in any and all foreign countries, and additionally to claim the filing date of any the Application(s) and/or otherwise take advantage of all rights of priority created by said Application(s) under any treaty relating thereto (including the right to claim priority to said patent application, e.g., under the provisions of the Paris Convention for the Protection of Industrial Property and the European Patent Convention).

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

Upon said consideration I do hereby covenant and agree with said Assignee, its successors and assigns, that I will not execute in writing or do any act whatsoever conflicting with these presents, and that I or my executors or administrators will at any time upon request, without further or additional consideration, but at the expense of said Assignee, its successors and assigns, execute such additional writings and do such additional acts as said Assignee, its successors and assigns, may deem necessary or desirable to perfect the Assignee's enjoyment of this grant, and render all necessary assistance in making application for and obtaining original, divisional, reissues or extended Letters Patent of the United States, or of any and all foreign countries on said invention, and in enforcing any rights occurring as a result of such application or patents, by giving testimony in any proceedings or transactions involving such applications or patents.

I hereby request the Honorable Commissioner of Patents and Trademarks to issue the Letters Patent to Assignee in accordance with this instrument.

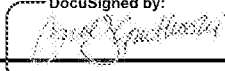
I have hereunto set my hand on January 28, 2021 | 2:04 PM EST

DocuSigned by:  
  
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Dalong Liu

IN WITNESS WHEREOF, I have hereunto set my hand on  
January 28, 2021 | 1:08 PM CST \_\_\_\_\_, on behalf of Assignee Regents of the University of  
Minnesota accepting this assignment.

REGENTS OF THE UNIVERSITY OF MINNESOTA

DocuSigned by:  
  
0FB835187311411...

Carol Grutkoski  
Chief of Staff and Operations Manager  
per Presidential Delegation ID\_257866

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018



UNIVERSITY OF MINNESOTA  
**ASSIGNMENT**

WHEREAS, I, Parker O'Brien, have invented certain new and useful inventions in ADAPTIVE REFOCUSING OF ULTRASOUND TRANSDUCER ARRAYS USING IMAGE DATA, for which applications for Letters Patents of the United States have been made, said applications being filed as follows: Provisional application no. 62/591,308 on November 28, 2017; and Utility application no. 16/202,992 on November 28, 2018 (the "Application(s)");

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I hereby request the Honorable Commissioner of Patents and Trademarks to issue the Letters Patent to Assignee in accordance with this instrument.

I have hereunto set my hand on November 3, 2020 | 4:35 PM CST.

DocuSigned by:

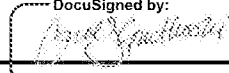
/ Parker D. O'Brien /  
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Parker O'Brien

Attorney Docket No. 0110.000582US01  
UM Case No. 20160018

IN WITNESS WHEREOF, I have hereunto set my hand on  
January 28, 2021 | 1:08 PM CST \_\_\_\_\_, on behalf of Assignee Regents of the University of  
Minnesota accepting this assignment.

REGENTS OF THE UNIVERSITY OF MINNESOTA

DocuSigned by:  
  
0FB835187311411...

Carol Grutkoski  
Chief of Staff and Operations Manager  
per Presidential Delegation ID\_257866

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