

PATENT ASSIGNMENT

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| SUBMISSION TYPE: | NEW ASSIGNMENT |
| NATURE OF CONVEYANCE: | ASSIGNMENT |
| CONVEYING PARTY DATA | |
| Name | Execution Date |
| Mark Brendan Sugrue | 05/20/2008 |
| Paul Francis Whelan | 05/20/2008 |
| Kevin Peter Robinson | 05/22/2008 |
| Tarik Ahmed Chowdhury | 05/27/2009 |
| RECEIVING PARTY DATA | |
| Name: | Dublin City University |
| Street Address: | Collins Avenue |
| Internal Address: | Glasnevin |
| City: | Dublin 9 |
| State/Country: | IRELAND |
| PROPERTY NUMBERS Total: 1 | |
| Property Type | Number |
| Application Number: | 12994855 |
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| Total Attachments: 12 | |

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AGREEMENT FOR ASSIGNMENT OF INVENTION RIGHTS

THIS AGREEMENT made the 19th of May, 2008

BETWEEN:

- (1)** Mark Brendan Sugrue, an Irish citizen of 22 Davin Gardens, Caherdavin, Limerick, Ireland; (hereinafter called the "DCU Inventor") of the first part, and
 - (2)** Dublin City University, Collins Avenue, Glasnevin, Dublin 9, Ireland (hereinafter called the "DCU") of the other part.
-

- A. WHEREAS** the DCU Inventor has conceived and disclosed to DCU, an Invention entitled "**Electronic Cleansing of Digital Data Sets**", (referred to herein as "**Invention**"), a description of which is attached hereto as "Exhibit A" and is hereby incorporated by reference; and
 - B. WHEREAS**, the said Invention was conceived and/or first reduced to practice under the auspices of DCU; and
 - C. WHEREAS**, rights of the DCU Inventor and DCU in the Invention are governed by the terms of the DCU Intellectual Property Policy **AND WHEREAS** the DCU Inventor holds the Invention and all patent rights and other rights and powers obtainable and exercisable in respect thereof in trust for DCU and the DCU Inventor has agreed with DCU to assign to DCU all his right, title, share and interest in and to the said Invention.
- 1. NOW THIS DEED WITNESSETH** that in consideration of the premises and of the sum of Ten Euro (€10.00) paid by DCU to the DCU Inventor at or before the signing of these presents (the receipt whereof the DCU Inventor does hereby acknowledge) the DCU Inventor does hereby assign, transfer convey and set unto DCU its successors and assigns all right, title, share and interest of the DCU Inventor in and to (i) the said Invention (including without limitation any know how, trade secrets, confidential information, copyright, patent rights, trade mark rights, design rights and database rights whether vested, contingent or future in and all rights of action and all other rights of whatever nature in and to the Invention whether now known or in the future created to which the DCU Inventor is now or may at any time after the date of this Assignment be entitled by virtue of, or pursuant to, any of the laws in force in any part of the world); (ii) any improvements in or modifications thereof; and (iii) any know-how relating thereto together with all other rights and interest in same with full power to DCU to apply for and obtain letters patent therefor in its own

name in any country of the world in respect of the Invention or improvements in or modifications thereof, together with all rights and benefits arising therefrom under the International Convention for the Protection of Industrial Property or the Treaty Establishing the World Trade Organisation. The DCU Inventor waives any moral rights to which he may be entitled under any legislation now existing or in future enacted in any part of the world and for the avoidance of doubt this waiver shall extend to the licensees and successors in title to the Invention.

- 2. The DCU Inventor hereby covenant with DCU that he shall execute all further documents and do all such further things that may be requested by DCU and as are necessary for the purpose of enabling DCU to make application in its own name in any country of the world for letters patent in respect of the said Invention and for vesting the Invention, application for patent, patent, know-how, copyright or design in DCU or its assignee or nominee absolutely. The DCU Inventor hereby irrevocably appoints/appoint DCU as his Attorney in his name to execute and to do any document, act or thing that may be necessary to comply with the provisions of this Clause.
- 3. The law of Ireland shall govern this Assignment and the parties agree to submit to the exclusive jurisdiction of the courts of Ireland for the resolution of disputes hereunder.

IN WITNESS WHEREOF the DCU Inventor has hereunto set his hand and seal the day and year first above written.

SIGNED SEALED AND DELIVERED

by the said

in the presence of:

Mark Sugrue
 MARK BRENDAN SUGRUE
 DATE 20-May-2008

Valeria Olyunina
 DATE 20-May-2008
Amanda Kiene
 DATE 20-May-2008

(Witnesses)

SIGNED SEALED AND DELIVERED

by DUBLIN CITY UNIVERSITY

in the presence of:

Richard Stokes
 RICHARD STOKES (CEO, INVENT DCU)
 DATE 27.05.08

Maire Prooney
 DATE 27/05/08
Daragh Heenan
 DATE 27-May-2008

(Witnesses))

EXHIBIT A

A method of processing a 3-dimensional Computed Tomography Colonography data set to remove tagged material is disclosed. The method involves the preliminary processing step of classifying volume elements in the data set as corresponding to air, tagged material or colon tissue. Methods of overcoming erroneous classification of Partial Volume air/tagged material boundary volume elements are disclosed. Specific tagged material volume elements at the colon tissue/tagged material interface are isolated and the output of an edge recovery algorithm is recorded for those isolated tagged material volume elements identified returning a value in excess of a threshold. Each edge recovered volume element is subsequently reclassified as a colon tissue volume element and the remaining tagged material volume elements are deleted from the data set and reclassified as air.



AGREEMENT FOR ASSIGNMENT OF INVENTION RIGHTS

THIS AGREEMENT made the 19th of May, 2008

BETWEEN:

- (1) Paul Francis Whelan, an Irish citizen of 29, Calderwood Road, Drumcondra, Dublin 9, Ireland ;(hereinafter called the "DCU Inventor") of the first part, and
- (2) Dublin City University, Collins Avenue, Glasnevin, Dublin 9, Ireland (hereinafter called the "DCU") of the other part.

-
- A. WHEREAS** the DCU Inventor has conceived and disclosed to DCU, an Invention entitled "**Electronic Cleansing of Digital Data Sets**", (referred to herein as "**Invention**"), a description of which is attached hereto as "**Exhibit A**" and is hereby incorporated by reference; and
 - B. WHEREAS**, the said Invention was conceived and/or first reduced to practice under the auspices of DCU; and
 - C. WHEREAS**, rights of the DCU Inventor and DCU in the Invention are governed by the terms of the DCU Intellectual Property Policy **AND WHEREAS** the DCU Inventor holds the Invention and all patent rights and other rights and powers obtainable and exercisable in respect thereof in trust for DCU and the DCU Inventor has agreed with DCU to assign to DCU all his right, title, share and interest in and to the said Invention.
- 1. NOW THIS DEED WITNESSETH** that in consideration of the premises and of the sum of Ten Euro (€10.00) paid by DCU to the DCU Inventor at or before the signing of these presents (the receipt whereof the DCU Inventor does hereby acknowledge) the DCU Inventor does hereby assign, transfer convey and set unto DCU its successors and assigns all right, title, share and interest of the DCU Inventor in and to (i) the said Invention (including without limitation any know how, trade secrets, confidential information, copyright, patent rights, trade mark rights, design rights and database rights whether vested, contingent or future in and all rights of action and all other rights of whatever nature in and to the Invention whether now known or in the future created to which the DCU Inventor is now or may at any time after the date of this Assignment be entitled by virtue of, or pursuant to, any of the laws in force in any part of the world); (ii) any improvements in or modifications thereof; and (iii) any know-how relating thereto together with all other rights and interest in same with full power to DCU to apply for and obtain letters patent therefor in its own

name in any country of the world in respect of the Invention or improvements in or modifications thereof, together with all rights and benefits arising therefrom under the International Convention for the Protection of Industrial Property or the Treaty Establishing the World Trade Organisation. The DCU Inventor waives any moral rights to which he may be entitled under any legislation now existing or in future enacted in any part of the world and for the avoidance of doubt this waiver shall extend to the licensees and successors in title to the Invention.

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3. The law of Ireland shall govern this Assignment and the parties agree to submit to the exclusive jurisdiction of the courts of Ireland for the resolution of disputes hereunder.

IN WITNESS WHEREOF the DCU Inventor has hereunto set his hand and seal the day and year first above written.

SIGNED SEALED AND DELIVERED

by the said

[Handwritten signature of Paul Francis Whelan]

PAUL FRANCIS WHELAN

DATE 20-MAY-2008

In the presence of:

[Handwritten signature of witness]

DATE 20-May-2008

[Handwritten signature of witness]

DATE 20/5/08

(Witnesses)

SIGNED SEALED AND DELIVERED

by DUBLIN CITY UNIVERSITY

[Handwritten signature of Richard Stokes]

RICHARD STOKES (CEO, INVENT DCU)

DATE 27/05/08

In the presence of:

[Handwritten signature of witness]

DATE 27/05/08

[Handwritten signature of witness]

DATE 27-MAY-2008

(Witnesses))

EXHIBIT A

A method of processing a 3-dimensional Computed Tomography Colonography data set to remove tagged material is disclosed. The method involves the preliminary processing step of classifying volume elements in the data set as corresponding to air, tagged material or colon tissue. Methods of overcoming erroneous classification of Partial Volume air/tagged material boundary volume elements are disclosed. Specific tagged material volume elements at the colon tissue/tagged material interface are isolated and the output of an edge recovery algorithm is recorded for those isolated tagged material volume elements identified returning a value in excess of a threshold. Each edge recovered volume element is subsequently reclassified as a colon tissue volume element and the remaining tagged material volume elements are deleted from the data set and reclassified as air.



AGREEMENT FOR ASSIGNMENT OF INVENTION RIGHTS

THIS AGREEMENT made the 19th of May, 2008

BETWEEN:

- (1) Kevin Peter Robinson, an Irish citizen of 112 St. Stephen's Green, Dublin 2, Ireland ;(hereinafter called the "DCU Inventor") of the first part, and
 - (2) Dublin City University, Collins Avenue, Glasnevin, Dublin 9, Ireland (hereinafter called the "DCU") of the other part.
-

- A. WHEREAS** the DCU Inventor has conceived and disclosed to DCU, an Invention entitled "**Electronic Cleansing of Digital Data Sets**", (referred to herein as "**Invention**"), a description of which is attached hereto as "Exhibit A" and is hereby incorporated by reference; and
 - B. WHEREAS**, the said Invention was conceived and/or first reduced to practice under the auspices of DCU; and
 - C. WHEREAS**, rights of the DCU Inventor and DCU in the Invention are governed by the terms of the DCU Intellectual Property Policy **AND WHEREAS** the DCU Inventor holds the Invention and all patent rights and other rights and powers obtainable and exercisable in respect thereof in trust for DCU and the DCU Inventor has agreed with DCU to assign to DCU all his right, title, share and interest in and to the said Invention.
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name in any country of the world in respect of the Invention or improvements in or modifications thereof, together with all rights and benefits arising therefrom under the International Convention for the Protection of Industrial Property or the Treaty Establishing the World Trade Organisation. The DCU Inventor waives any moral rights to which he may be entitled under any legislation now existing or in future enacted in any part of the world and for the avoidance of doubt this waiver shall extend to the licensees and successors in title to the Invention.

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- 3. The law of Ireland shall govern this Assignment and the parties agree to submit to the exclusive jurisdiction of the courts of Ireland for the resolution of disputes hereunder.

IN WITNESS WHEREOF the DCU Inventor has hereunto set his hand and seal the day and year first above written.

SIGNED SEALED AND DELIVERED
by the said

Kevin Peter Robinson
KEVIN PETER ROBINSON
DATE 22/05/08

In the presence of:
J. W. Darlison

DATE 22.05.08
J. W. Darlison
DATE 22.05.08

(Witnesses)

SIGNED SEALED AND DELIVERED
by **DUBLIN CITY UNIVERSITY**

Richard Stokes
RICHARD STOKES (CEO, INVENT DCU)
DATE 27/05/08

In the presence of:
Maria Rooney

DATE 27/05/08
Dorothy Keenan
DATE 27-MAY-2008

(Witnesses))

EXHIBIT A

A method of processing a 3-dimensional Computed Tomography Colonography data set to remove tagged material is disclosed. The method involves the preliminary processing step of classifying volume elements in the data set as corresponding to air, tagged material or colon tissue. Methods of overcoming erroneous classification of Partial Volume air/tagged material boundary volume elements are disclosed. Specific tagged material volume elements at the colon tissue/tagged material interface are isolated and the output of an edge recovery algorithm is recorded for those isolated tagged material volume elements identified returning a value in excess of a threshold. Each edge recovered volume element is subsequently reclassified as a colon tissue volume element and the remaining tagged material volume elements are deleted from the data set and reclassified as air.

DCU

AGREEMENT FOR ASSIGNMENT OF INVENTION RIGHTS

THIS AGREEMENT made the 27th day of May, 2009

BETWEEN:

- (1) Tarik Ahmed Chowdhury a Bangladeshi citizen of Apartment: VA301D Post Graduate Accommodation, Dublin City University, Dublin 9, Ireland;

(hereinafter called the "DCU Inventor") of the first part, and
 - (2) Dublin City University, Collins Avenue, Glasnevin, Dublin 9, Ireland (hereinafter called the "DCU") of the other part.
-

- A. WHEREAS** the DCU Inventor has conceived and disclosed to DCU, an Invention entitled "**Electronic Cleansing of Digital Data Sets**", (referred to herein as "**Invention**"), a description of which is attached hereto as "Exhibit A" and is hereby incorporated by reference; and
 - B. WHEREAS**, the said Invention was conceived and/or first reduced to practice under the auspices of DCU; and
 - C. WHEREAS**, rights of the DCU Inventor and DCU in the Invention are governed by the terms of the DCU Intellectual Property Policy **AND WHEREAS** the DCU Inventor holds the Invention and all patent rights and other rights and powers obtainable and exercisable in respect thereof in trust for DCU and the DCU Inventor has agreed with DCU to assign to DCU all his right, title, share and interest in and to the said Invention.
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and (iii) any know-how relating thereto together with all other rights and interest in same with full power to DCU to apply for and obtain letters patent therefor in its own name in any country of the world in respect of the Inventions or improvements in or modifications thereof, together with all rights and benefits arising therefrom under the International Convention for the Protection of Industrial Property or the Treaty Establishing the World Trade Organisation. The DCU Inventor waives any moral rights to which he may be entitled under any legislation now existing or in future enacted in any part of the world and for the avoidance of doubt this waiver shall extend to the licensees and successors in title to the Invention.

- 2. The DCU Inventor hereby covenant with DCU that he shall execute all further documents and do all such further things that may be requested by DCU and as are necessary for the purpose of enabling DCU to make application in its own name in any country of the world for letters patent in respect of the said Invention and for vesting the Invention, application for patent, patent, know-how, copyright or design in DCU or its assignee or nominee absolutely. The DCU Inventor hereby irrevocably appoints/appoint DCU as his Attorney in his name to execute and to do any document, act or thing that may be necessary to comply with the provisions of this Clause.
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IN WITNESS WHEREOF the DCU Inventor has hereunto set his hand and seal the day and year first above written.

SIGNED SEALED AND DELIVERED
by the said

Tarik Ahmed Chowdhury
TARIK AHMED CHOWDHURY
 DATE 27-05-2009

in the presence of:
David O'Leary
 DATE 27/05/2009
Paul
 DATE 27/05/2009

(Witnesses)

SIGNED SEALED AND DELIVERED
by **DUBLIN CITY UNIVERSITY**

Richard Stokes
RICHARD STOKES (CEO, INVENT DCU)
 DATE 27-05-09

in the presence of:
Maeve Rooney
 DATE 27/05/09
David Heary
 DATE 27-MAY-2009

(Witnesses))

EXHIBIT A

Electronic Cleansing of Digital Data Sets

A method of processing a 3-dimensional Computed Tomography Colonography data set to remove tagged material is disclosed. The method involves the preliminary processing step of classifying voxels in the data set as corresponding to air, tagged material or colon tissue. Methods of overcoming erroneous classification of Partial Volume air/tagged material interface voxels are disclosed. The present invention also provides for methods of circumventing problems resulting from removal of tagged material from a CTC data set, which can result in the erosion of soft-tissue structures partially covered by tagged colonic fluid.

New International (PCT) Patent Application claiming priority from British Patent Application No. 0809616.6 filed May 28th, 2008.