ABSTRACT

METHOD AND APPARATUS FOR ENHANCING ACCURACY OF TUMOUR RESPONSE THERAPY EVALUATION WITH REDUCED EXAMINATION TIME

The present disclosure relates to a method for evaluating therapy response in a tumor. In an aspect, the method can include the steps of obtaining a first set of volume images before contrast; obtaining a second set of volume images post contrast; subtracting the first set of volume images from the second set of volume images to obtain a third set of images that focus on enhanced tumor tissue; drawing, based on the third set of images, slice-by-slice, a region of interest (ROI) on boundary of the tumor in a representative section showing largest tumor dimension; generating a pharmacokinetic parameter map by voxel-wise comparing pharmacokinetic parameter value for each voxel of each slice with respect to one or more threshold values, and classifying the voxel based on output of the comparison step; and superimposing the ROI on the pharmacokinetic parameter map to enable interpretation of the ROI.

FORM 2

THE PATENTS ACT, 1970

(39 of 1970)

&

The Patent Rules, 2003

COMPLETE SPECIFICATION

(See sections 10 & rule 13)

1. TITLE OF THE INVENTION

METHOD AND APPARATUS FOR ENHANCING ACCURACY OF TUMOUR RESPONSE THERAPY EVALUATION WITH REDUCED EXAMINATION TIME

2. APPLICANTS (S)

NAME	NATIONALITY	
JENA, Amarnath	IN	
TANEJA, Sangeeta	IN	
MEHTA, Shashi, Bhushan	IN	

3. PREAMBLE TO THE DESCRIPTION

COMPLETE

The following specification particularly describes the invention and the manner in which it is to be performed.

METHOD AND APPARATUS FOR ENHANCING ACCURACY OF TUMOUR RESPONSE THERAPY EVALUATION WITH REDUCED EXAMINATION TIME

FIELD OF INVENTION

[0001] The present disclosure relates to medical image analysis, and more particularly, to a method and apparatus for reducing examination time and enhancing accuracy for response therapy evaluation in a tumor.

BACKGROUND OF THE INVENTION

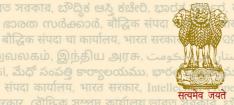
[0002] The background description includes information that may be useful in understanding the present disclosure. It is not an admission that any of the information provided herein is prior art or relevant to the presently claimed invention, or that any publication specifically or implicitly referenced is prior art.

[0003] Functional imaging using single photon emission computed tomography (SPECT) and positron emission tomography (PET) is extremely valuable in the diagnosis of various medical disorders. Uncertainty in the anatomic definition on SPECT and PET images, however, sometimes limits their usefulness. To overcome this, a combination of magnetic resonance images (MRI) and X-ray computed tomography (CT) images with functional SPECT or PET images of the same sections of the body is sometimes used. This provides complementary anatomic (MRI or CT) and physiological (SPECT or PET) information that is of great importance to research, diagnosis and treatment.

[0004] Magnetic resonance imaging ("MRI") is a well-known, highly useful technique for diagnosing abnormalities in biological tissues. MRI can detect abnormalities that are difficult or impossible to detect by other techniques, without the use of x-rays or invasive procedures.

[0005] Functional body images and structural images are two types of medical images used by medical practitioners for the diagnosis of certain medical disorders. Functional body images such as those derived from SPECT or PET scans, provide physiological information, whereas structural images such as those derived from CT or MRI, provide an anatomic map of the body. Different medical imaging techniques may provide scans with complementary and occasionally conflicting information. For





बौद्धिक संपदा कार्यालय, भारत सरकार, Intellectual Property Office, Government of India, व्यिद्धिक সম্পত্তিৰ কাৰ্যালয়, ভাৰত চৰকাৰ, बौद्धिक संपदा दफ्तर, भारत



دی انٹیلیکچولپراپرٹ. அறிவுசா**पेटेंट**ा**प्रमाण्**। **पत्र**

बोद्धिङसंपद्यानुंडायविय, भारतसरहार, का पेटेंट कायोलय, भारत सरकार का The Patent Office, Government Of India Patent Certificate

बौद्धिक सम्पत्ति कार्यालयं, भारत सरकार, من ्पेटेंर्ट नियमावली का नियम رواياً (Rule 74 of The Patents Rules) کیشفریشی, हाँ गाँण अमारिहें छोडा प्रेट 🃭 ैग भारत सरकार, Intellectual Property Office, Government of India

सरकार, पेटेंट सं.री Patent No. मठवार, ФЬФӨЛ G2CMC БЛЕМ.2 526542м.С. ФӨМАМО ЕДАЬОМА, बौद्धिक संपदा चा कार्यालय, भारत सरकार,

ு அறிவுசார் சொத்து அலுவலகம், இந்திய அரசு, آفس آف دی انٹیلیکچولپراپرٹیگورنمنٹ آف انڈیا ,அறிவுசார் சொத்து

आवेदन सं. / Application No. पति कार्यालयं, भारत : रकार 3655/DEL/2015 مندي من الليكيونال برايري अवेदन सं. / Application No. पति कार्यालयं, भारत : रकार 3655/DEL/2015

फाइल करने की तारीख / Date of Filing

वर्षालय, <u>जांबज 5 09/11/2015 संपदा दफ्तर,</u> भारत सरकार, वौद्धिक সম्পদ कार्यालय, जांबज সরব

पेटेंटी / Patentee

1.JENA, Amarnath 2.TANEJA, Sangeeta 3.MEHTA, Shashi, Bhushan

प्रमाणित किया जाता है <mark>कि पेटेंटी को, उपरोक्त</mark> आवेदन में यथाप्रकटित METHOD AND APPARATUS FOR ENHANCING ACCURACY OF TUMOUR RESPONSE THERAPY EVALUATION WITH REDUCED EXAMINATION ा का के लिए, पेटेंट अधिनियम, 1970 के उपबंधों के अनुसार आज तारीख नवम्बर 201<mark>5 के नौ</mark>वें दिन से बीस वर्ष की अवधि के लिए पेटेंट अनुदत्त किया गया है।

and latt is hereby certified that a patent has been granted to the patentee for an invention entitled METHOD AND APPARATUS FOR ENHANCING ACCURACY OF TUMOUR RESPONSE THERAPY EVALUATION WITH REDUCED EXAMINATION TIME as disclosed in the above mentioned application for the term of 20 years from the 9th day of November 2015 in accordance with the provisions of the Patents Act, 1970.

^{ठबकाब} अनुदान की तारीख^{तर}: भा 14/03/2024 Date of Grant :

e, Government of India जीकिन की बिर्मिट की बिर्मिड व रुखेरि, क्राठंड संस्कृत की बिर्मिड पेटेंट नियंत्रक लिय, १

दक संपदा कार्यालय भा Controller of Patents

टिप्पणी - इस पेटेंट के नवीकरण के लिए फीस, यदि इसे बनाए रखा जाना है, नवम्बर 2017 के नौवें दिन को और उसके पश्चात प्रत्येक वर्ष मे उसी दिन देय होगी।

<u>बौद्धिक संपदा कार्यालय. भारत सरकार, घेंपिव भेंपत्री स्दउत, ਭਾਰਤ ਸਰਕਾਰ, 05ହର/7 G2CଅE 67Eଅ, 7 bଅ୭\୬୭୧ଅ, 6, 08ଅ୬୭୦ E2୭\୭୭୬, बी</u>

भारत सरकार, Intellectual Property Office, Government of India, (वाफ्निक সম্পত্তিৰ কাৰ্যালয়, ভাৰত চৰকাৰ, बौद्धिक संपदा दप्तर, भारत सरकार

Note. - The fees for renewal of this patent, if it is to be maintained, will fall / has fallen due on 9th day of November 2017 and on the same

सरकार, घेंपिव मेंपडी स्ढउत, ਭਾਰਤ मतवात, ଉbହରମ ଓଅ୯୬୪.୪ b೫୬୪.୪୭୭୬.୯, ଉର୍ଥ୬୬୬୦ ୪୭୬୪୬୬, बौद्धिक संपदा चा कार्यालय, भारत सरकार, ବୌଦିକ ସମ୍ପଦ نشورانه ملڪيت جو ,அற்திய அரசு, واندي هايو அறிவுசார் சொத்து அலுவலகம், இந்திய அரசு آفس آف دي انٹيليکچولپراپرٹيگورنمنٹ آف انڈیا