

## Deformable image registration adjustment support device, support method and program

### Reduce the effort of the coordinator

#### Overview

In recent years, deformable image registration (DIR) has been used to create radiotherapy treatment plans in medical practice. The accuracy of DIR is evaluated by the small difference between the image after deformation by DIR and the image obtained by imaging. To evaluate this, the common point (landmark point) between two images is found and compared. However, since the deformation by DIR is a non-rigid deformation, the relative positional relationship of each position such as the distance between the vertices of the image to be mapped to the image and the angle of the vertices is not necessarily preserved. Therefore, it is necessary for the coordinator to make a judgment based on his/her experience, and there is a problem that the burden on the coordinator is large.

To solve this problem, the inventors developed a phantom in which a rod simulating a tumor and an organ can be inserted, and an algorithm for verifying the accuracy of DIR using this phantom, and completed the present invention.

In addition to being able to reproduce various shape changes easily by replacing the rod, the phantom of the present invention can automatically set thousands of landmark points by applying position information at the time of medical image acquisition, and can automate all DIR accuracy evaluations.

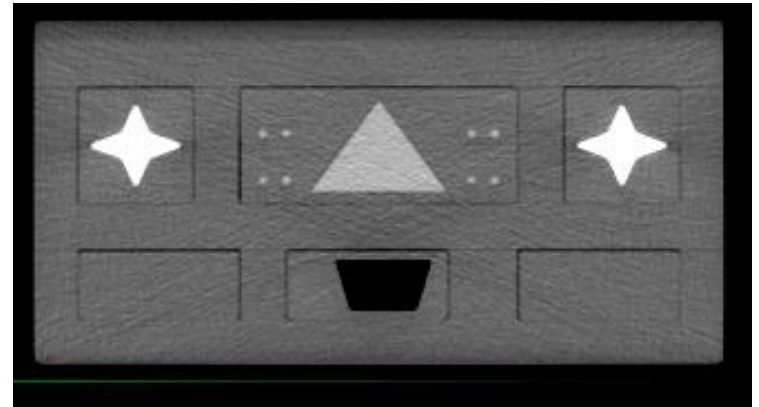
#### Product Application

- ☐ Deformable image registration(DIR)
- ☐ Radiation therapy

#### IP Data

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 Admin No. : T19-009

## Reproduces various shape changes easily by replacing rods



#### Related Works

- [1] Kadoya N, Siwaporn S, et al .J Appl Clin Med Phys . 2021 Jul;22(7):255-265. Development of a physical geometric phantom for deformable image registration credentialing of radiotherapy centers for a clinical trial
- [2] Siwaporn S. Kadoya N, et al . Appl Clin Med Phys . 2023 Apr;24(4):e13890. Dosimetric impact of deformable image registration using radiophotoluminescent glass dosimeters with a physical geometric phantom

#### Contact