ANATOMIA AA operation manual (v1.01)

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1. Function overview

 A data recording medium such as CD ROM or DVD obtained from hospital contains many medical images other than slice images from CT or MRI scans. In ANATOMIA, a volume data from which stereoscopic data is created is constructed from a set of slice images corresponding to one scan of CT or MRI. Therefore, it is necessary to find out what kind of slice images are and where they are in the medium. In addition, slice image file contains personal information such as patient name, date-of birth, and etc. In the world of the Internet, it is recommended that these personal information are removed before transmission, as file transmission may be eavesdropped by malicious third parties. ANATOMIA AA (ANATOMIA Analyzer & Anonymizer) is a tool to identify sets of slice images eligible for ANATOMIA from a medium, and to remove personal information before uploading.

 ANATOMIA AA is an application program that runs on Mirosoft Windows OS of Windows 7, and later versions. It is downloaded from an ANATOMIA web page, and installed to your Windows based personal computer or tablet to execute.

 ANATOMIA AA analyzes hundreds of medical images stored in the medium in detail. Since the reading speed of the hard disk is about 10 times faster than that of the CD drive, it is recommended that you copy the data of CD and DVD to your computer beforehand.

2. Installation and uninstallation

 Installation of ANATOMIA AA is completed by just placing the downloaded ANATOMIA AA program (file name: ANATOMIA_AAxxx_j.exe: note xxx is the version number) in a convenient location in your personal computer. Depending on the setting of your Windows Explorer, the program may appear with no extension as ANATOMIA_AAxxx_j. When you try to launch ANATOMIA AA, a message of "Program cannot be started because there is no msvcp140.dll on the computer" may appear. In that case, look for "Visual C ++ Redistributable Package for Visual Studio 2015" from the Microsoft website, and run installation program such as vc_redist.x86.exe.

To uninstall ANATOMIA AA, just delete ANATOMIA_AAxxx_e.exe from your personal computer.

3.   Start-up

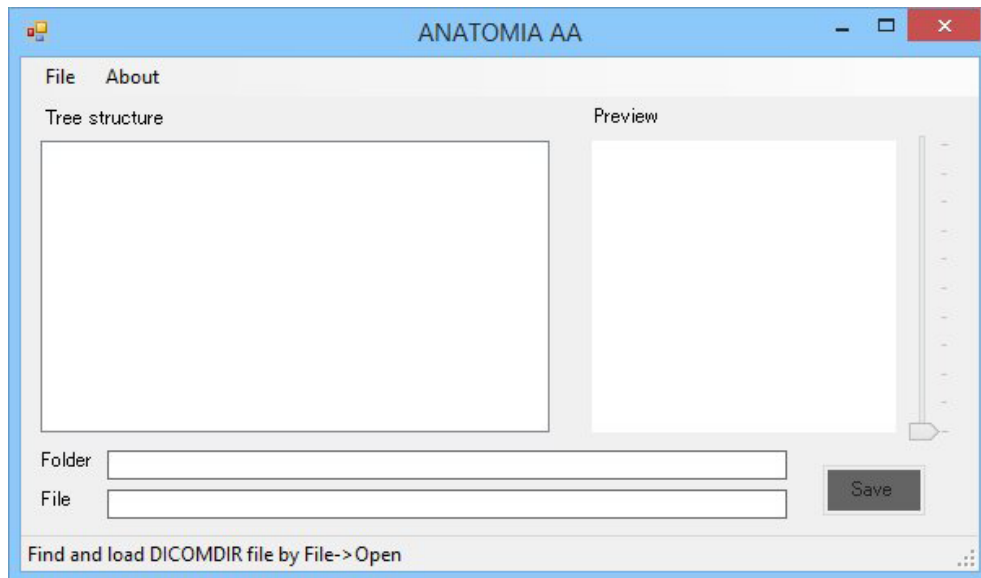ANATOMIA AA is launched by specifying the ANATOMIA_AAxxx_j.exe file using the

Fig.1 Initial screen

mouse in Windows Explorer, and clicking "Open", or by double-clicking the file. When ANATOMIA AA program is started, the initial screen in Figure 1 is displayed.

4.   Display of hierarchical structure based on DICOMDIR file

The medium provided by hospital is created based on DICOM standard. In the DICOM standard, a file named DICOMDIR indicating the structure of the medical images in the medium should be placed in the root folder of the medium. When you click "Open" on the "File" menu of ANATOMIA AA, "Select DICOMDIR File" screen as shown in Figure 2 pops up. On the screen, find a DICOMDIR file in the root folder of the medium, and click the "Open" button. The medical images in the medium are analyzed, and a hierarchical structure as shown in Figure 3 is displayed.

Since this process scans and analyses all the medical image files in the medium, it will take some time before the hierarchical structure is displayed.

Medical images in the medium are organized in three levels of Patient, Study, and Series. Patient layer shows patient name, Study layer shows date of the examination with note,
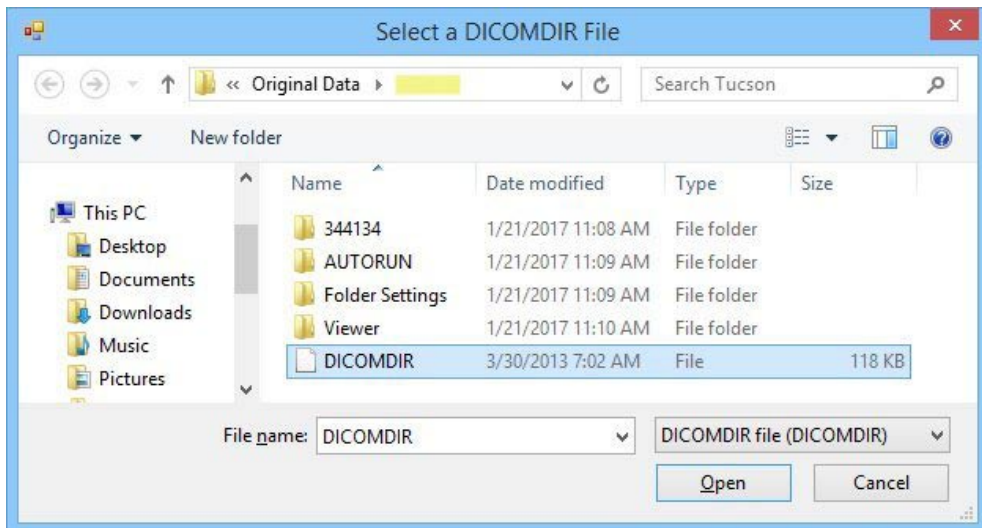
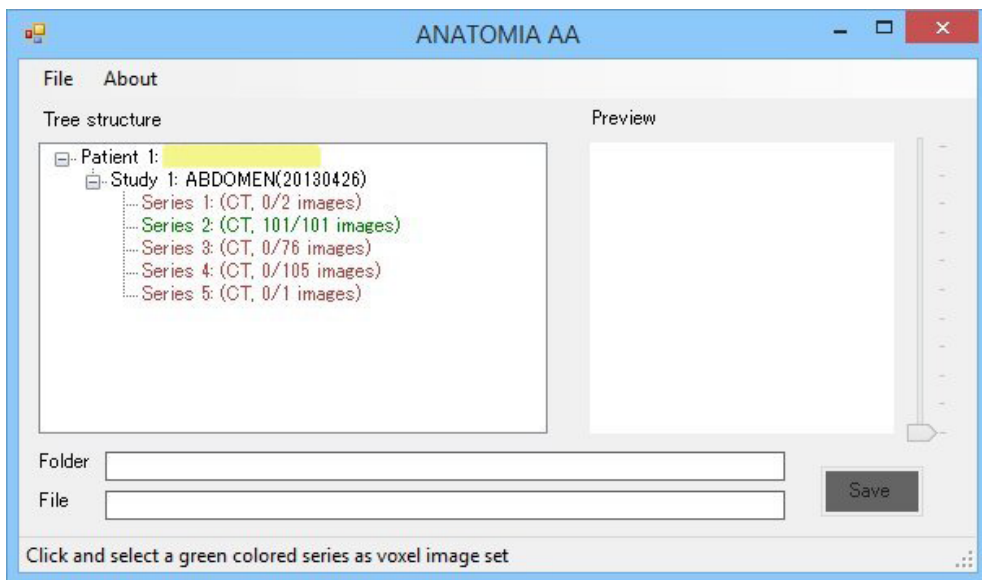Fig.2 "Open DICOMDIR file" screen
Note: Part of te image is modified

Fig.3 Hierarchical structure screen
Note: Patient name is masked

and Series layer shows a symbol indicating the type of scan device, the numbers of the volume data eligible image files and that of the total image files.

 A Series includes a set of slice images corresponding to one scan of CT or MRI. ANATOMIA AA analyzes whether each Series matches the criteria as a volume data of ANATOMIA. As a result of the analysis, a Series layer is displayed in green if qualified as ANATOMIA volume data, and in red if not.

5.   Display image

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When a Series is clicked, images belonging to the Series can be viewed in the image display area as shown in Figure 4. When there are multiple images in the Series, you can switch the display image by moving the slider on the right side of the image. When an image is displayed, the folder name and the image file name to which the image belongs
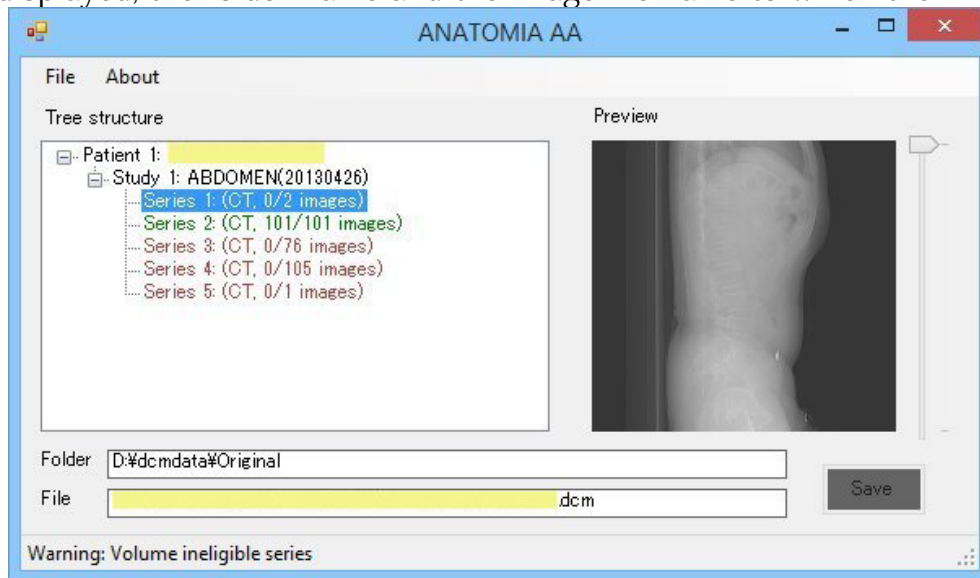

Fig.4 Image display screen
Note: Patient name and file name are masked

are displayed at the bottom of the screen.

You can see images even in a Series of red colored which is ineligible as a volume data.

6.   Create and save anonymized image files

By clicking a green colored Series, the word on the "Save" button turns white as shown in Figure 5, and now you are ready to save the slice images of the Series. When you click the "Save" button, the "Browse for Folder" screen shown in Figure 6 pops up. In the screen, specify a folder to save the set of the slice image files. When you specify a folder and click the OK button, anonymized slice images are generated and saved in that folder.

The generated slice image file has different name from the original one. This name consists of a three digit number and four digit number combined by an underscore, and the extension of ".dcm" as a DICOM standard compliant file. The three digit number is a combined Patient number, Study number, and Series number, which indicates the location of the Series on the hierarchical structure. The four digit number shows the order of the sequence of the image file in the set. By confirming that the set of images is generated in the specified folder, processing of ANATOMIA AA is completed. You can upload the
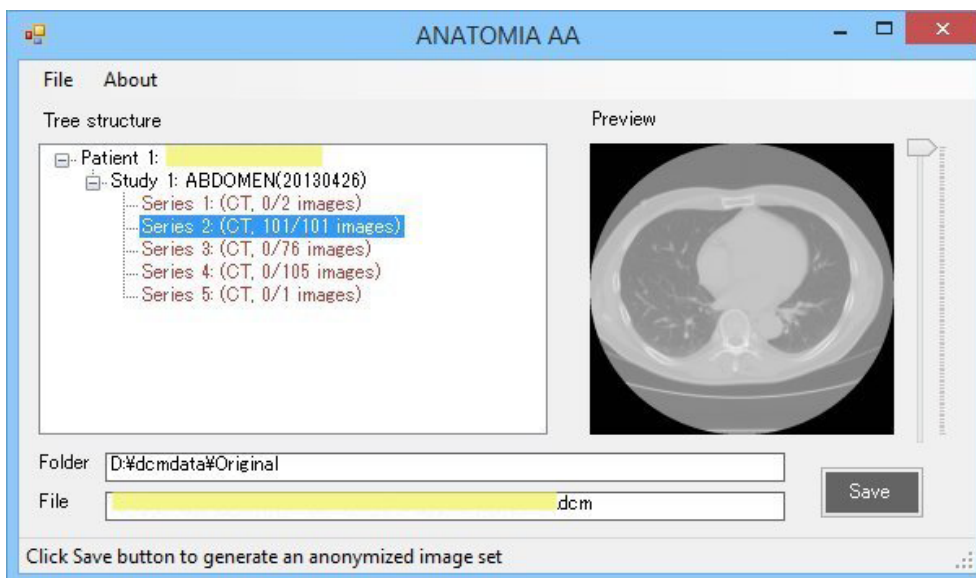
4

Fig.5 Creating anonymized image files screen
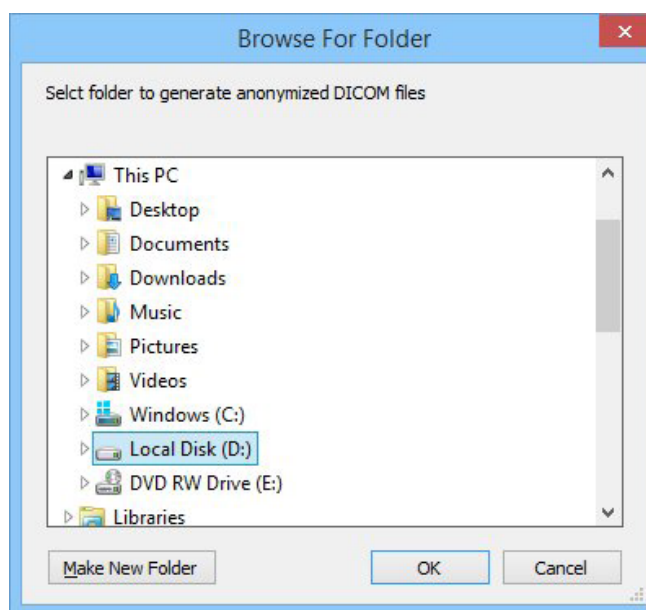Note: Patient name and file name are masked

Fig. 6 "Browse For Folder" screen

created image files to ANATOMIA.

7. Guide and error message display

Operation status is displayed on the bottom of the ANATOMIA AA screen, where an operation guide, an error or a warning message is displayed.