

Brain Auto-Segmentation for Craniotomy Project Lab Meeting

2021.03.09

TAIL lab 정현재

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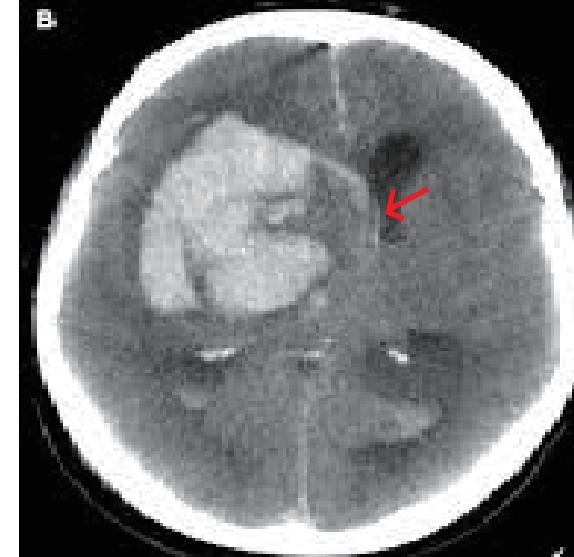
Project Outline

Main Goal

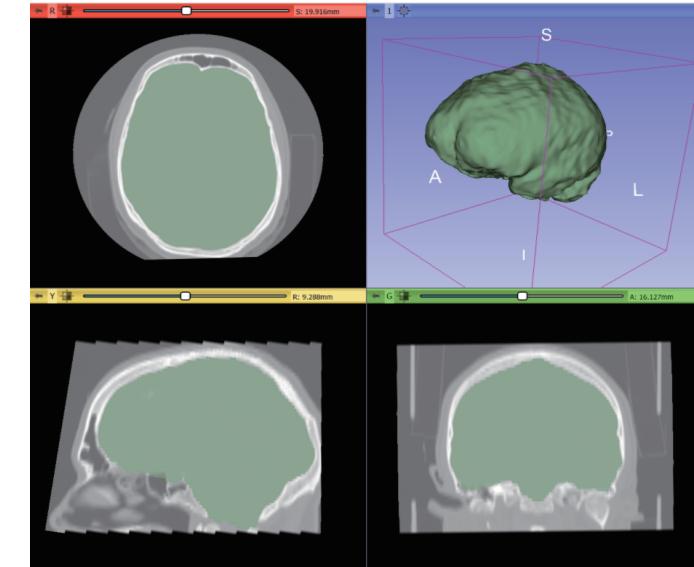
- Axial Image에서 좌뇌와 우뇌를 나누어주는 Sagittal line의 치우침 정도와 Brain Total Volume 등을 측정하여, 개두 수술을 진행을 결정한다.
- Brain, Skull Analyse Program을 개발한다.



Normal



Stroke

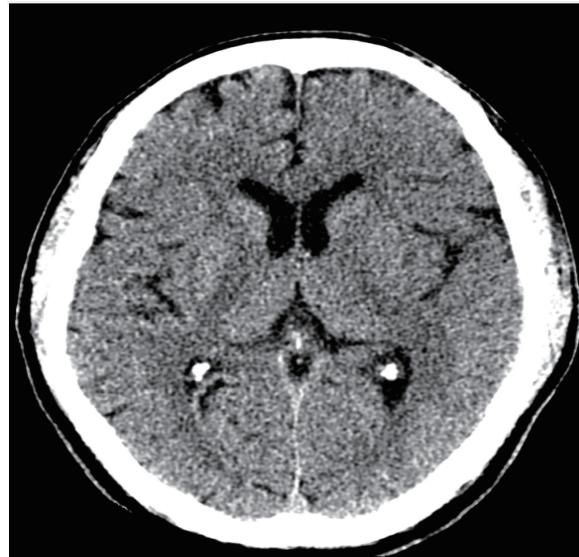


Brain, Skull Analyse

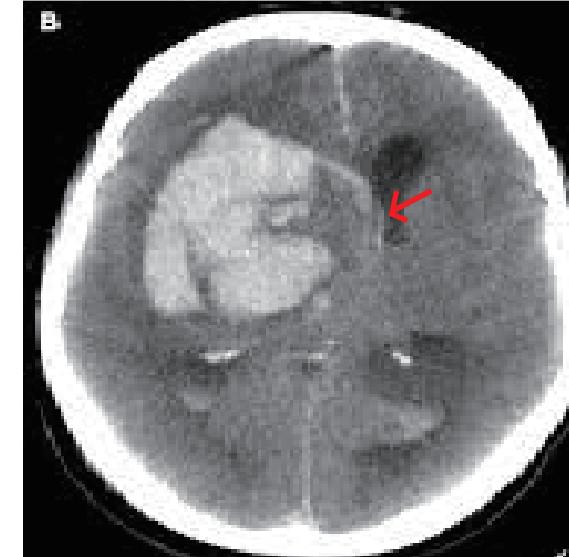
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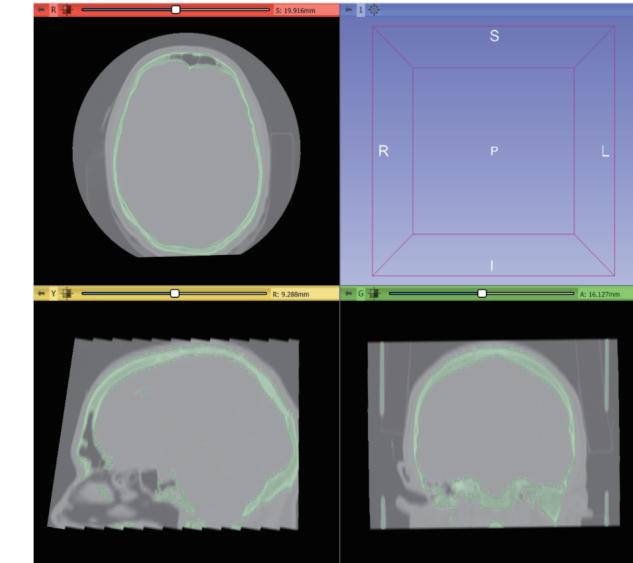
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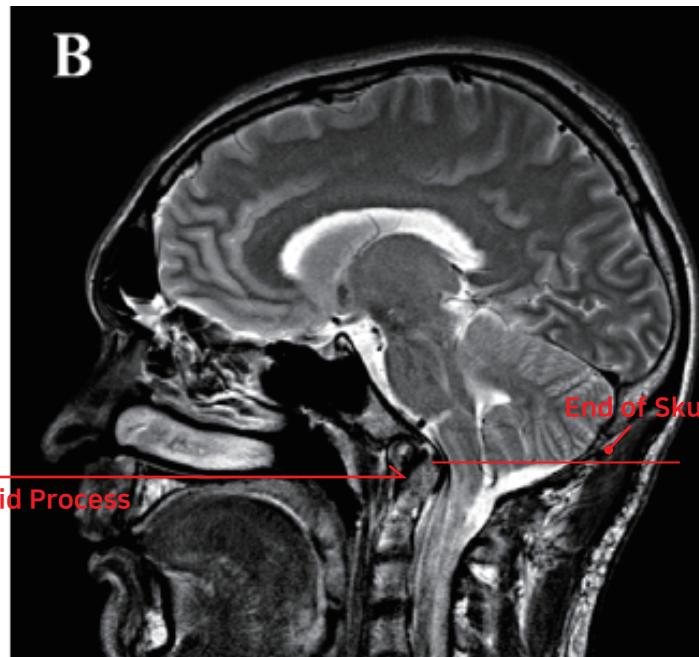
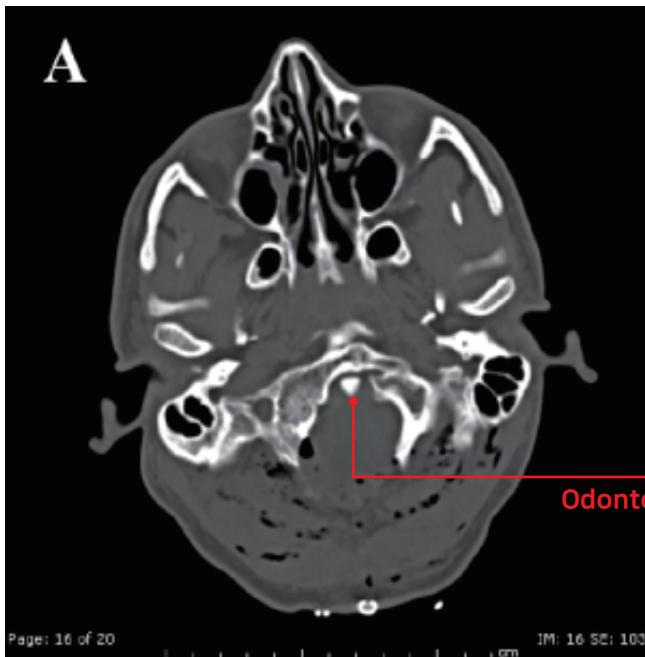


Brain, Skull Analyse

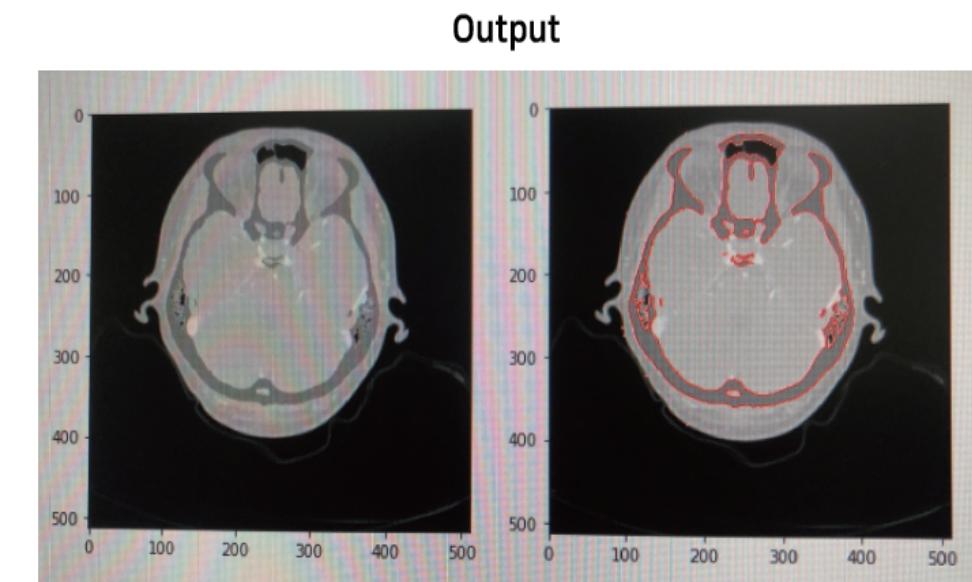
Skull Labeling Process

Now Processing...

Brain Volume Detect를 위해서 Auto-Segmentation을 진행중. 현재 Labeling 작업 완료
Dual Energy CT image -> Skull Labeling (Odontoid Process 전까지 Labeling 작업) (Image 240~250)



Sagittal



Axial

Skull Auto-Segmentation

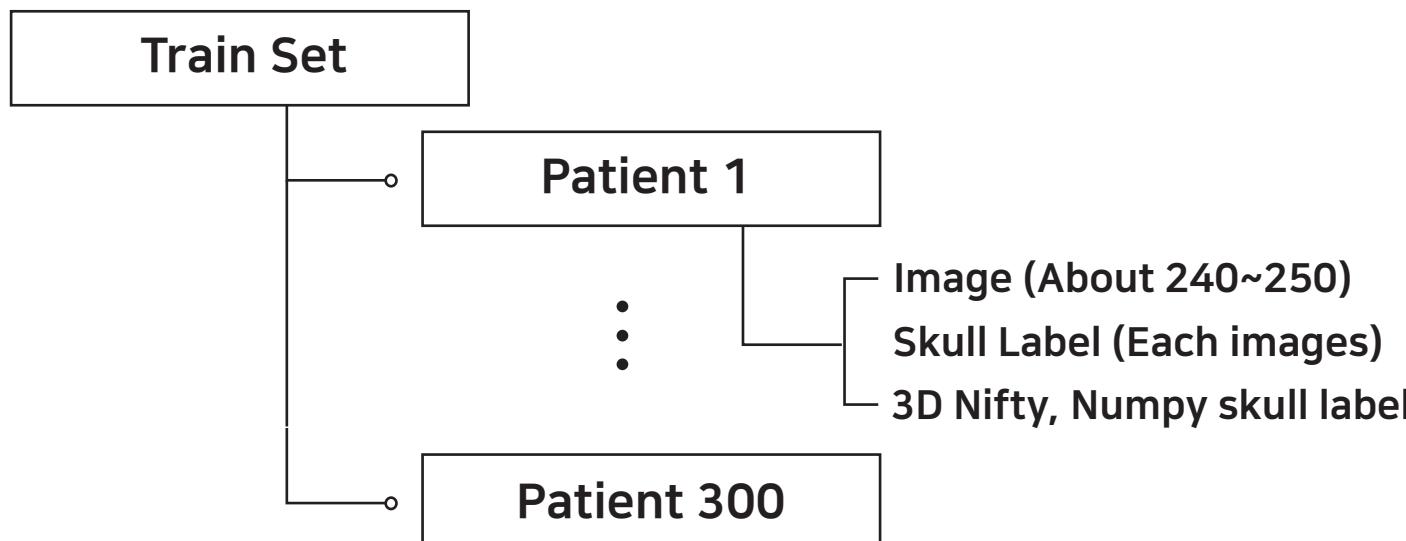
Dataset

Train Data = Dual Energy CT Image 300 Patients with Skull Label (Total About 73500 Slice)

Predict Data = Normal + Dual Energy CT Patients Image

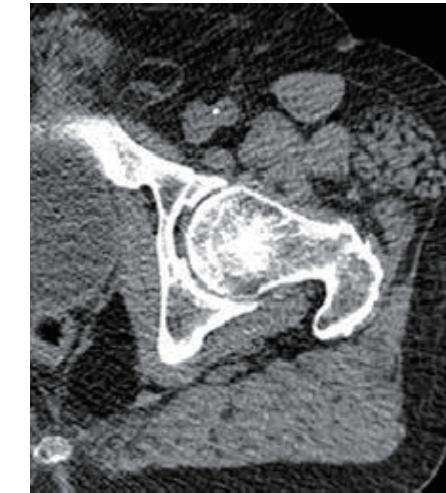
300 Patient → About 240~250 CT Axial Images with dicom file (512 * 512) + Each of Label Data

(Skull Contour) + 2D, 3D Label Data (NIFTY, NUMPY)

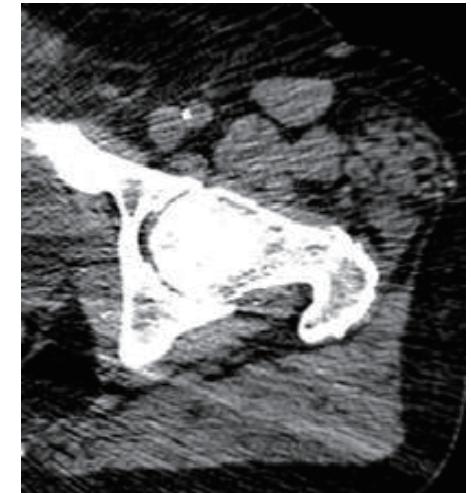


Discussion

- Dual Energy CT 와 Normal CT (Single Energy CT)의 resolution, noise, matter color 등의 차이를 개선할 수 있는 Image Preprocessing



Dual Energy



Normal

- Computer GPU Server