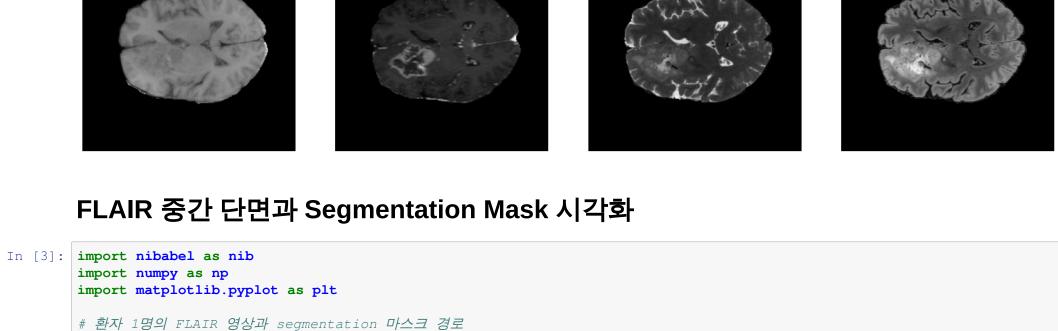
```
FLAIR 3D 이미지의 전체 2D 단면 시각화
In [1]: import nibabel as nib
                   import numpy as np
                   import matplotlib.pyplot as plt
                   # FLAIR 파일 경로
                   flair_path = '/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/BraTS2021_00000/BraTS2021_00000_flair.ni
                   i.gz'
                   # 데이터 로드 및 numpy로 변환
                   flair_img = nib.load(flair_path)
                   flair_data = flair_img.get_fdata()
                   # \frac{1}{2} \frac{
                   num_slices = flair_data.shape[2]
                   # 그리드 크기 설정 (예: 8행 x 8열)
                   cols = 8
                   rows = int(np.ceil(num_slices / cols))
                   # 플롯 크기
                   plt.figure(figsize=(20, 2.5 * rows))
                   # 모든 슬라이스 시각화
                   for i in range(num_slices):
                           plt.subplot(rows, cols, i + 1)
                           plt.imshow(flair_data[:, :, i], cmap='gray')
                           plt.axis('off')
                           plt.title(f"Slice {i}")
                   plt.tight_layout()
                   plt.show()
                                                                                                                                                                                                                                                                  Slice 7
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                                                             Slice 153
                                                                                              Slice 154
                            Slice 152
                  T1, T1ce, T2, FLAIR 각각의 중간 단면 시각화
In [2]: import nibabel as nib
                   import numpy as np
                   import matplotlib.pyplot as plt
                   patient_id = "BraTS2021_00000"
                   base_path = f"/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/{patient_id}"
                   # 시퀀스 파일들
                   modalities = {
                           "T1": f"{base_path}/{patient_id}_t1.nii.gz",
                           "T1ce": f"{base_path}/{patient_id}_t1ce.nii.gz",
                           "T2": f"{base_path}/{patient_id}_t2.nii.gz",
                            "FLAIR":f"{base_path}/{patient_id}_flair.nii.gz"
                   # 시퀀스 불러오기
                   images = {}
                   for name, path in modalities.items():
                           img = nib.load(path)
                            images[name] = img.get_fdata()
                   # 공통된 슬라이스 인덱스 선택 (z축 중간)
                   slice_index = images["FLAIR"].shape[2] // 2
                   # 시각화
                   plt.figure(figsize=(16, 4))
                   for i, (modality, data) in enumerate(images.items()):
                          plt.subplot(1, 4, i + 1)
                           plt.imshow(data[:, :, slice_index], cmap='gray')
                           plt.title(modality)
                           plt.axis('off')
                   plt.suptitle(f"{patient_id} - Middle Slice (z={slice_index})")
                   plt.tight_layout()
                   plt.show()
```

```
BraTS2021_00000 - Middle Slice (z=77)
T1ce
```



flair_path = '/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/BraTS2021_00000/BraTS2021_00000_flair.ni

seg_path = '/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/BraTS2021_00000/BraTS2021_00000_seg.nii.

```
# 데이터 불러오기
flair_img = nib.load(flair_path)
seg_img = nib.load(seg_path)
flair = flair_img.get_fdata()
seg = seg_img.get_fdata()
# 중간 슬라이스 인덱스
slice_idx = flair.shape[2] // 2
# 시각화
plt.figure(figsize=(12, 5))
plt.subplot(1, 2, 1)
plt.imshow(flair[:, :, slice_idx], cmap='gray')
plt.title('FLAIR (Middle Slice)')
plt.subplot(1, 2, 2)
plt.imshow(seg[:, :, slice_idx])
plt.title('Segmentation Mask')
plt.tight_layout()
plt.show()
                  FLAIR (Middle Slice)
                                                                                  Segmentation Mask
```

```
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         50 -
         100 -
                                                                    100 -
        150 -
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        200 -
                                                                    200 -
                    50
                             100
                                      150
                                               200
                                                                                 50
                                                                                         100
                                                                                                  150
                                                                                                           200
       FLAIR + Segmentation Mask 오버레이 시각화
In [8]: import nibabel as nib
        import numpy as np
        import matplotlib.pyplot as plt
```

```
flair_path = '/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/BraTS2021_00000/BraTS2021_00000_flair.ni
seg_path = '/mnt/ssd/brain-tumor-prediction/data/raw/BraTS2021_Training_Data/BraTS2021_00000/BraTS2021_00000_seg.nii.
gz'
# 데이터 로딩
flair = nib.load(flair_path).get_fdata()
seg = nib.load(seg_path).get_fdata()
# 중간 슬라이스
slice_idx = flair.shape[2] // 2
flair_slice = flair[:, :, slice_idx]
seg_slice = seg[:, :, slice_idx]
# 시각화 (overlay)
plt.figure(figsize=(8, 6))
plt.imshow(flair_slice, cmap='gray')
plt.imshow(np.ma.masked_where(seg_slice == 0, seg_slice), cmap='autumn', alpha=0.5)
plt.title('FLAIR + Segmentation Overlay')
plt.axis('off')
plt.show()
            FLAIR + Segmentation Overlay
```