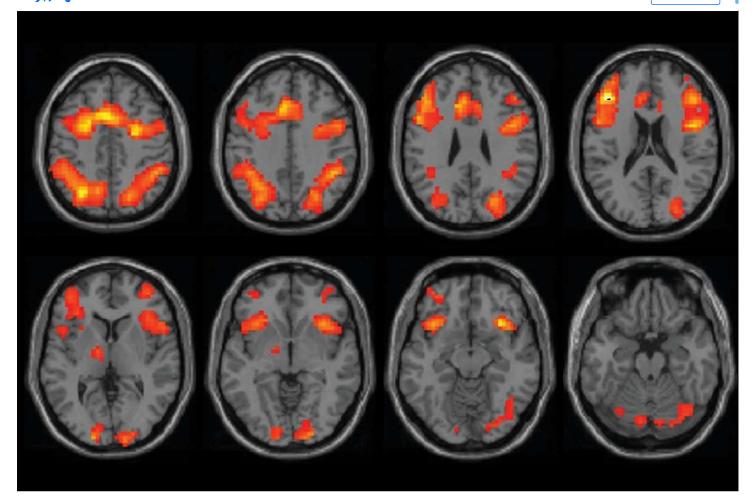
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基于Python的MRI图像处理——数据转换与读取



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最近在研究利用Python做MRI的数据处理,争取可以摆脱SPM,批量自动做分析。

但国内外的相关教程并不多,所以在这里记录学习的过程,锻炼代码和写作能力。

这篇文章主体是用Markdown写的,所以代码和说明部分就直接用英文了。

Part 1 -- Data format conversion

- · Batch conversion to .nii files
- · Read .nii file using nibabel
- Directly read .IMA file using pydicom

1. First install nibabel, pydicom, dicom2nifti using pip install

import numpy as np
import os
import matplotlib.pyplot as plt
import nibabel
import pydicom
import dicom2nifti

2. Convert all dicom files into nii files in every folder

3. Using Nibabel to read .nii files

```
bold = nibabel.load(data_path + 'nii_BOLD_IPAT2_LONGBASELINEC1C3C4_0004/4_bold
bold = np.rot90(bold)
print(bold.shape)
plt.imshow(bold[:,:,25,200], cmap='gray')
plt.show()
(88, 88, 49, 240)
```

(Alternative) Using pydicom to directly read dicom files

```
files = os.listdir(data_path + 'T1_MPRAGE_SAG_1_0ISO_IPAT2_0003/') #Get file l:
data = []
data_all = []
for file in files:
    data = pydicom.dcmread(data_path + 'T1_MPRAGE_SAG_1_0ISO_IPAT2_0003/' + fi'
    data_all.append(data.pixel_array)

#Convert list to array
t1_all = np.array(data_all)
print(t1_all.shape)
plt.imshow(t1_all[100,:,:],cmap='gray')
plt.show()
```

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核磁共振成像 Python fMRI(功能性磁共振成像)