Weeknote5

fMRI数据预处理

头动矫正

- 头动会导致voxel的变化，fMRI会认为激活数据都在图像边缘（contrast），头动的信号会提高大脑的阈值，导致神经信号微弱
- 假设头是刚体，rigid body registration：位移坐标xyz，转动的三个角度（pitch roll yaw）
- Framewise Displacement
  计算大脑中心50mm半径的球型区域，削弱转动的影响
  $FD_i = |\Delta X_i| + |\Delta Y_i| + |\Delta Z_i| + |\Delta l_{\alpha i}| + |\Delta l_{\beta i}| + |\Delta l_{\gamma i}|$,here $\Delta X_i = |X_i - X_{i-1}|$and $\Delta l_{\alpha i} = |(\alpha_{i-1} - \alpha_i) * r|$
- 让被试咬一个东西（物理方法）

结构像和功能像结合

模版->个体，存在非线性因素
DPABI
HCP pipeline

- Remove signal changes that are both higher and lower than task frequency in a block design
- Cut-offs would be set to 2x and 1/2x the task frequency
- Advantage is removal of both signal drift (high-pass) and cardiac, respiration signal changes (low-pass)