Development of PowerMap: A software package for power analysis in neuroimaging studies
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Overview: PowerMap is a software tool box for power and sample size calculation for neuroimaging studies. Based on pilot study results, PowerMap can produce power and sample size images while accounting for massive multiple comparisons.

User Input
Pilot analysis results and output options are specified.

Power calculation options:

Image smoothness (optional):

Calculation
Statistical calculations are performed.

Smoothness calculation (optional):
\[
\text{var}(\frac{\partial^2 T}{\partial(x,y,z)^2})
\]

Effect size calculation:
Cohen's d

Random Field Module
Calculating power corrected for:
- FWE (family-wise error)
- FDR (false-discovery rate)

Output Image Generation
Output is generated as an image.

Power image:
At the anticipated sample size(s)

One-sample T
Linear regression

Two-sample T

Sample size image:
At the desired level of power

Sample size

System requirements: PowerMap is a self-contained package and does not require a particular analysis software package to run. However, the following are required to use PowerMap:
- MATLAB with Statistics Toolbox
- An image viewing software package (SPM, FSL, AFNI, MRICro, etc.)

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