Motivation & Background

Construction anatomical connections of large-scale brain networks via diffusion magnetic resonance imaging (dMRI) plays an important role in modeling the human connectome [1]. Previous studies have demonstrated that significant effects exist on the topological properties if applying different prior atlas [2, 3]. However, little is known whether the node refining in anatomical network construction matters. Here, node refining refers to whether to compute the gray matter/white matter boundary (GWB) for each node in the raw prior atlas before being used to construct the whole-brain networks with tractography.

Dataset & Methods

Fifty young healthy participants (25 female).

Results

1. Two example networks

M1

M2

2. Node refining effects

In sum, significant node-refining effects on topological metrics in large-scale anatomical network analysis, suggesting that node-refining does matter in quantifying anatomical topological properties.

References