

## HEALTH RESEARCH ABSTRACT SUBMISSIONS

# 15

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<b>College *</b>	College of Engineering
<b>Department *</b>	Biomedical Engineering
<b>Title of Research *</b>	An automated method to label cortex surfaces of human brain
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<b>Introduction &amp; Purpose *</b>	Cortex surface of human brain can be divided into subregions according to their anatomical structure features and cognitive functions. This study is aimed to label subregions on cortex surfaces of human brain generated from MR images.
<b>Experimental Design *</b>	Regular MRI protocols like T1, T2 and PD weighted scans are applied on our subjects and images of all of the scans are merged and preprocessed to extract brain tissues. Then surfaces are generated by using marching cubes to visualize human brain at a specific tissue composition level. Theoretically, brain surfaces have spherical geometry with a zero genus topology, so that they can be flattened to be spheres. SphericalDemons algorithm is used to register one sphere with another, which could be driven by surface features, such as curvature and distance from the surface to a hull of it. Deformation field is generated from SphericalDemons and the labels on an atlas surface can be warped onto a subject surface by the deformation field to get the automatic labels.
<b>Results *</b>	Four brain lobes can be labeled automatically onto a subject by this method and statistical evaluation of the results will be given.
<b>Conclusions *</b>	The automatic labeling will be compared with manual labeling to evaluate the reliability of the method. This method could be a potential efficient technique for brain surface parcellation.
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