

# Online Tools for Customizable ADNI Atlases: Technology and Application



<b>Type of Project:</b>	Fundamental and Clinical Imaging Research
<b>Methods:</b>	Imaging, Computer Science, Neurology
<b>Status:</b>	Under review, funding requested \$2,790,127
<b>Study Period:</b>	July 1, 2007 – June 30, 2012
<b>In Collaboration With:</b>	UCLA, UCSF
<b>University of Utah Collaborative Units:</b>	Scientific Computing and Imaging Institute
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## Project Summary:

Brain atlases are becoming powerful analysis tools to study changes in imaging caused by disease. They provide anatomic information to new subjects and define differences among groups or individuals. This project will quantify individual variability in brain scans and provide statistically meaningful results for future investigations. The imaging and biomarker data collected as part of the Alzheimer's Disease Neuroimaging Initiative (ADNI) represents a unique opportunity to develop and study new atlases. It provides a much larger set of data so atlases can be constructed on almost an endless variety of variables such as age, dementia severity, clinical course, and genetics. The project will build a set of software tools that will be made available to all investigators that can be used to generate high-resolution, study-specific atlases from the ADNI database of images and patient data. Unlike previous projects, the goal of this research is not merely a single atlas nor is it simply a set of new algorithms. Rather, we will provide an online Web portal through which users can request custom atlases. A computational infrastructure will deliver these on-demand atlases to the user. We also will pursue fundamental and technological improvements in the atlas construction and tissue classification. As an illustrative example, we will use these new tools to study metabolic asymmetry in using data from patients with Alzheimer's disease.

## Potential Benefits:

This research will make it possible for investigators anywhere in the world to construct specialized brain atlases based upon images from 800 individuals studied in the Alzheimer's Disease Neuroimaging Initiative. This will save investigators enormous effort and expense in identifying, characterizing, and imaging control subjects and permit research that otherwise would be impossible.