Figure 1. Images of T2, fractional anisotropy (FA) and mean apparent diffusion coefficient (ADC) from a healthy subject are displayed in coronal view.
Figure 2. 2-D visualization of coronal slices of a diffusion tensor MRI. Major eigenvector of each voxel is displayed with line (in-plane component of the eigenvector) and color (from green to red, out-of-plane component of the eigenvector) on the background image of fractional anisotropy. CC: corpus callosum, SLF: superior longitudinal fasciculus, ILF: inferior longitudinal fasciculus, CB: cingulum bundle, CST: cortico-spinal tract, UF: uncinate fasciculus, AF: arcuate fasciculus, Af: arcuate fibers, AL: anterior limb of internal capsule, PL: posterior limb of internal capsule, and Fx: fornix.
Figure 3. 3-D reconstruction of fiber structures (tractography) derived from DT-MRI using Runge-Kutta method with seed points inside of whole white matter. Shorter fibers less than 5cm were not displayed to reduce complexity.
Figure 4. Fiber tractography combined with cortical parcellation. Coronal, sagittal and axial cross-sectional views of white and gray matter combined with fiber tractography. Light yellow surface shows the gray-white matter boundary. CC: corpus callosum, CR: corona radiata, SLF: superior longitudinal fasciculus, OR: optic radiation, CB: cingulum bundle, SCP: superior cerebellar peduncle, CST: corticospinal tract, UF: uncinate fasciculus and AC: anterior commissure.
Figure 5. Coronal slice images (SPGR, T2, fractional anisotropy (FA) and mean apparent diffusion coefficient (ADC)) of a tumor brain have been displayed. The tumor is located in the right medial temporal lobe, adjacent to the right cerebral peduncle.
Figure 6. Visualization of diffusion tensor map of a brain tumor. Left panel shows whole brain DT-MRI map overlaid on FA map and the right panel demonstrates the magnified DT-MRI map of the tumor with mean ADC map as background. Tumor region is indicated by arrow. Except for the medial tumor margin, the tumor area shows high diffusivity and low anisotropy.
Figure 7. Tractography and cortical parcellation of tumor brain. Upper left panel shows the whole tractography with cross-section of gray and white matter surface. The cortical parcellation of gray matter surface is displayed in color. Upper right panel shows cross-section view of white matter overlaid with gray/white surface. Tumor is colored as white. Lower panels show the cross-sectional view with an axial MR slice image. CC: corpus callosum, SLF: superior longitudinal fasciculus, CB: cingulum bundle, AF: arcuate fibers, IC: internal capsule, CST: cortico-spinal tract, and SCP: superior cerebellar peduncle. STG: superior temporal gyrus, MTG: middle temporal gyrus and LV: lateral ventricle.