Center for Quantum Science and Engineering (CQSE)

Weekly Seminar
Sept. 24, 2010 (Friday)

TIME Sept. 24, 14:30 ~ 15:30
TITLE Computer-assisted extraction of intracranial aneurysms on 3D rotational angiograms based on a charged fluid model
SPEAKER Dr. Herbert H. Chang 張恆華
  Dept of Engineering Science and Ocean Engineering, NTU
PLACE Rm716, CCMS & New Physics Building, NTU

Abstract

Three-dimensional rotational angiography (3DRA) is an evolving imaging procedure from traditional digital subtraction angiography and is gaining much interest for detecting intracranial aneurysms. Computational fluid dynamics modeling plays an important role in understanding the biomechanical properties and in facilitating the prediction of aneurysm rupture. A successful computational study relies on an accurate description of the vascular geometry that is obtained from volumetric images. In this talk, an aneurysm extraction framework in an attempt to automatically segment vascular structures in 3DRA image volumes will be described. This software combines a region-growing segmentation method with the extension of a deformable contour based on the charged fluid model. It requires no prior knowledge of anatomic structures and automatically extracts the vasculature after the end-user selects a vessel section in a plane image. Experimental results on 15 cases indicate that aneurysm structures were effectively segmented and in good agreement with manual delineation outcomes.