Model-based Image Understanding Environment (MIUE)

MIUE aims to assist researchers and clinical experts in their bio-medical researches, clinical routines and educations. It contains a comprehensive computer software toolkit for bio-medical image manipulation including segmentation, registration, modeling and data exploration.

The kernel component of the MIUE is its model-based interactive segmentation module, which is developed to segment anatomic structures or lesions from 3D medical images. The majority of the tedious work in the segmentation is achieved by fully automatic procedures, and interactive functions are provided to enable experts to modify and evaluate the final results.

The tool has been used to segment and model brain, orbital and chest structures from both CT and MR scans. It also provide open interface for developer to further enhance and improve its functions or develop new function modules.

We believe this tool will be useful in many medical image related applications such as 3D image based anatomy structure education and training applications, complex pathologic case study, surgery planning and simulation, and quantitative and morphometric analysis of anatomy structures in vivo for various diseases.

Patents:
- Liu Jimin, Huang Su, Wieslaw L. Nowinski, “Method and apparatus for registration of brain atlas to MR images” Filed
- Liu Jimin, An automatic model-based Image Segmentation Method and System for Implementing the Method, Filed

Publications: