Abstract

Neurosurgery is a complex and delicate craft where a neurosurgeon needs to reach the tumors or lesion present deep inside the brain with precision, accuracy and safety, minimizing the damage caused to the brain tissues. The entry point and the trajectory of the tool above the skull are crucial in the case of neurosurgeries as a small error can cause death of the patient since there are number of major blood vessels and nerve cells present beneath the skull. So, as a first level for performing the neurosurgery, the entry spot and the trajectory of the surgical tool need to be fixed. This work focuses on the development of software which will help in extracting the entry point location for the surgical tool above the skull in neurosurgeries. Initially a 3D image of the patient was reconstructed from number of 2D head CT slices by the software using contour slicing and isosurfacing techniques. Then, using this software the surgeons can extract the location of the entry spot from the developed 3D image. Also the surgeon can check and verify the entry spot location before actually performing the surgery. A GUI was also developed for this software which makes it easy to handle even for a common man. Using this GUI the surgeon can easily determine the location and these coordinate points can be serially transmitted to the controller for performing robotic surgeries.
Surgical Entry Spot Location Developer Software for Neurosurgeries

References


Index Terms

Computer Science

Applied Sciences

Keywords

Neurosurgery  Cartesian coordinate location  GUI  image processing