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# Biopsy Planner – Visual Analysis for Needle Pathway Planning in Deep Seated Brain Tumor Biopsy

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## Abstract

Biopsies involve taking samples from living tissue using a biopsy needle. In current clinical practice they are a first mandatory step before any further medical actions are planned. Performing a biopsy on a deep seated brain tumor requires considerable time for establishing and validating the desired biopsy needle pathway to avoid damage. In this paper, we present a system for the visualization, analysis, and validation of biopsy needle pathways. Our system uses a multi-level approach for identifying stable needle placements which minimize the risk of hitting blood vessels. This is one of the major dangers in this type of intervention. Our approach helps in identifying and visualizing the point on the pathway that is closest to a surrounding blood vessel, requiring a closer inspection by the neurosurgeon. An evaluation by medical experts is performed to demonstrate the utility of our system.

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