

## **The Cerebral Vascular Occlusion Rapid Detection and Localization System**

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### **Abstract**

The Cerebral Vascular Occlusion Rapid Detection and Localization System is a medical tool designed to assist healthcare professionals in diagnosing and treating cerebral vascular obstructions. This tool constructs a three-dimensional point cloud model of cerebral blood vessels based on the results of computed tomography scans. By comparing the volume differences of blood vessels in the left and right hemispheres, we identify and mark the locations of vascular obstructions in the brain. This provides a clearer visualization of cerebral vascular structures, allowing for a specific assessment of areas with vascular anomalies. This system aids healthcare professionals in rapidly pinpointing the exact location of the obstruction, facilitating the development of the most suitable treatment plan and may be helpful for evaluating of surgical risks. The tool enables them to seize the golden treatment window, ensuring timely and effective interventions.

**Keywords:** stroke, computed tomography angiography, point cloud, image calibration, vascular obstructions