BRAIN TUMOR ANALYSIS REPORT

EXECUTIVE SUMMARY

Automated brain tumor segmentation analysis reveals a lesion with total volume of 52.92 cm³ located in the right hemisphere, central region. The tumor demonstrates moderate (10-30%) enhancement pattern with 20.5% enhancing tissue. Size classification: very_large (>15 cmÂ³). Quantitative analysis provides objective measurements for treatment planning and monitoring.

QUANTITATIVE FINDINGS

- Total Tumor Volume: 52.92 cm³
- Maximum Diameter: 62.0 mm
- Tumor Core Volume: 11.12 cm³
- Enhancing Component: 10.86 cm³ (20.5% of total volume)
- Necrotic Component: 0.26 cm³ (0.5% of total volume)
- Edematous Component: 41.80 cm³ (79.0% of total volume)
- Enhancement Intensity: Mean 520.73, Maximum 1146.00
- Voxel Resolution: 1.0x1.0x1.0 spacing

MORPHOLOGICAL ASSESSMENT

- Anatomical Location: Right Hemisphere, Central Region
- Hemisphere Involvement: Right
- Centroid Coordinates: (162, 106, 91)
- Enhancement Pattern: Moderate (10-30%) (20.5% of tumor volume)
- Necrosis Assessment: minimal (<10%) (0.5% involvement)
- Peritumoral Changes: Present edematous changes
- Blood-Brain Barrier: Disrupted based on enhancement pattern

TISSUE CHARACTERIZATION

- Enhancement Present: Yes
- Necrosis Present: Yes
- Edema Present: Yes
- Dominant Tissue Type: Non-enhancing based on quantitative analysis
- Heterogeneity Index: High

CLINICAL RECOMMENDATIONS

1.

Immediate Assessment

: Clinical correlation with neurological examination and symptom evaluation recommended

2.

Multidisciplinary Review

: Neurosurgical consultation for resectability assessment given volume of 52.92 cm^3

3.

Treatment Planning

: Quantitative measurements support precision treatment planning and dose optimization

4.

Monitoring Protocol

: Baseline established for volumetric response assessment in follow-up imaging

5.

Advanced Imaging

: Consider perfusion or spectroscopic imaging if treatment planning requires additional characterization

6.

Quality Assurance

: Automated measurements should be validated with expert radiological interpretation

TECHNICAL SPECIFICATIONS

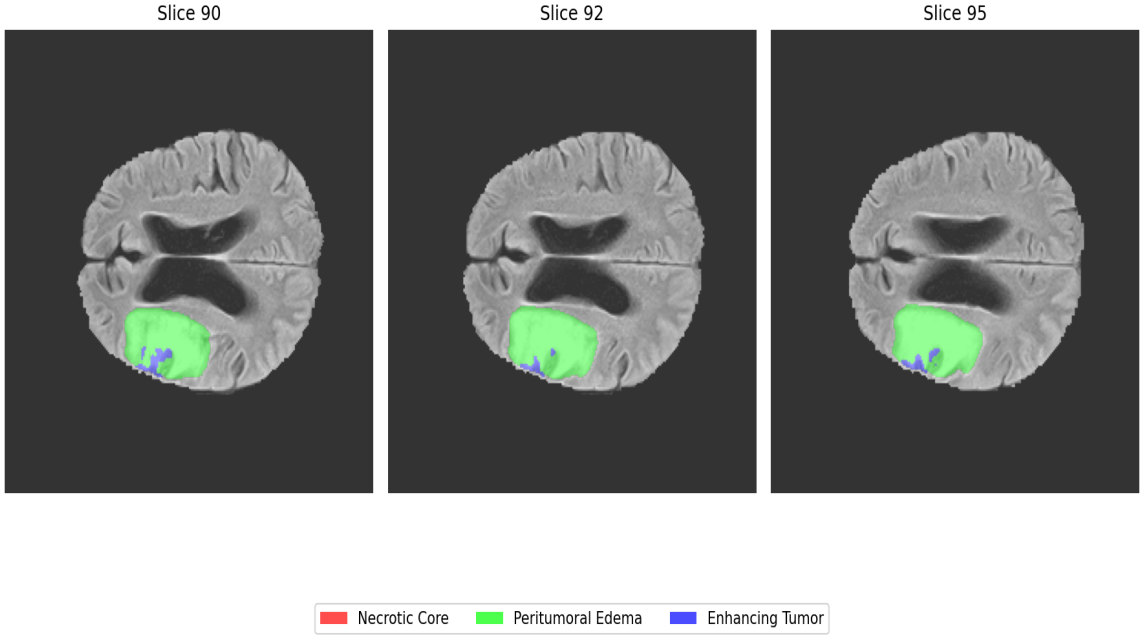
- Analysis Method: AI-powered 3D segmentation with multi-parametric MRI integration
- Image Quality: Adequate spatial resolution for reliable quantitative analysis
- Segmentation Confidence: High reliability for volume measurements and tissue classification
- Validation Status: Results pending clinical correlation and expert validation
- Processing Date: September 14, 2025 at 11:33 PM

LIMITATIONS AND DISCLAIMERS

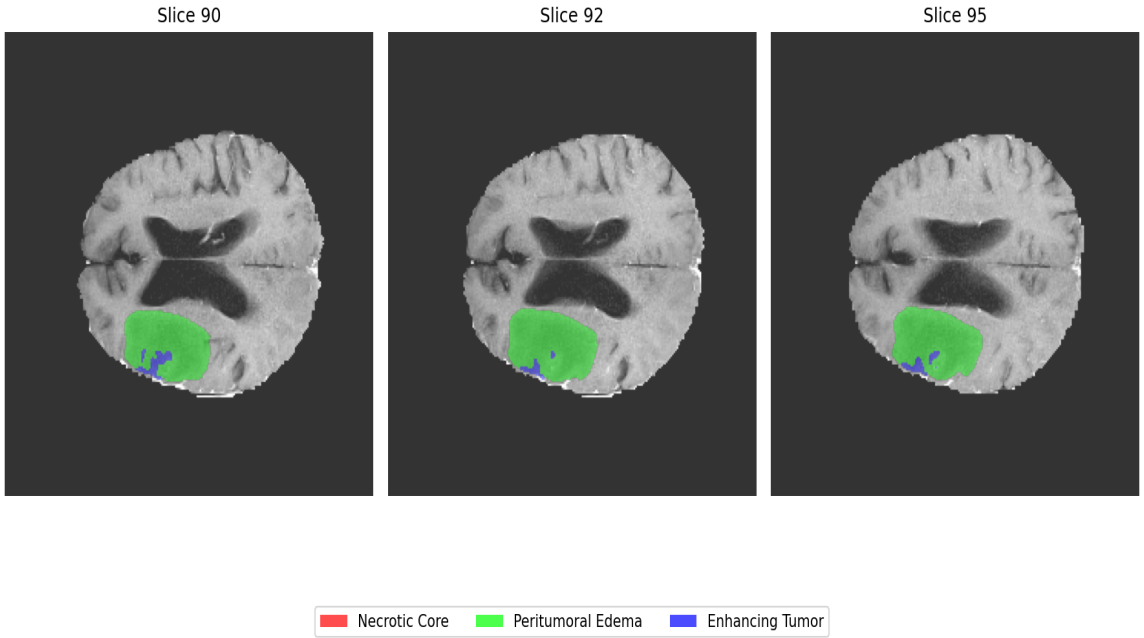
This automated analysis provides quantitative measurements to support clinical decision-making. Results should be interpreted in conjunction with clinical findings, patient history, and expert radiological review. Treatment decisions should not be based solely on automated analysis. Follow-up imaging and tissue sampling may be required for definitive diagnosis and treatment planning.

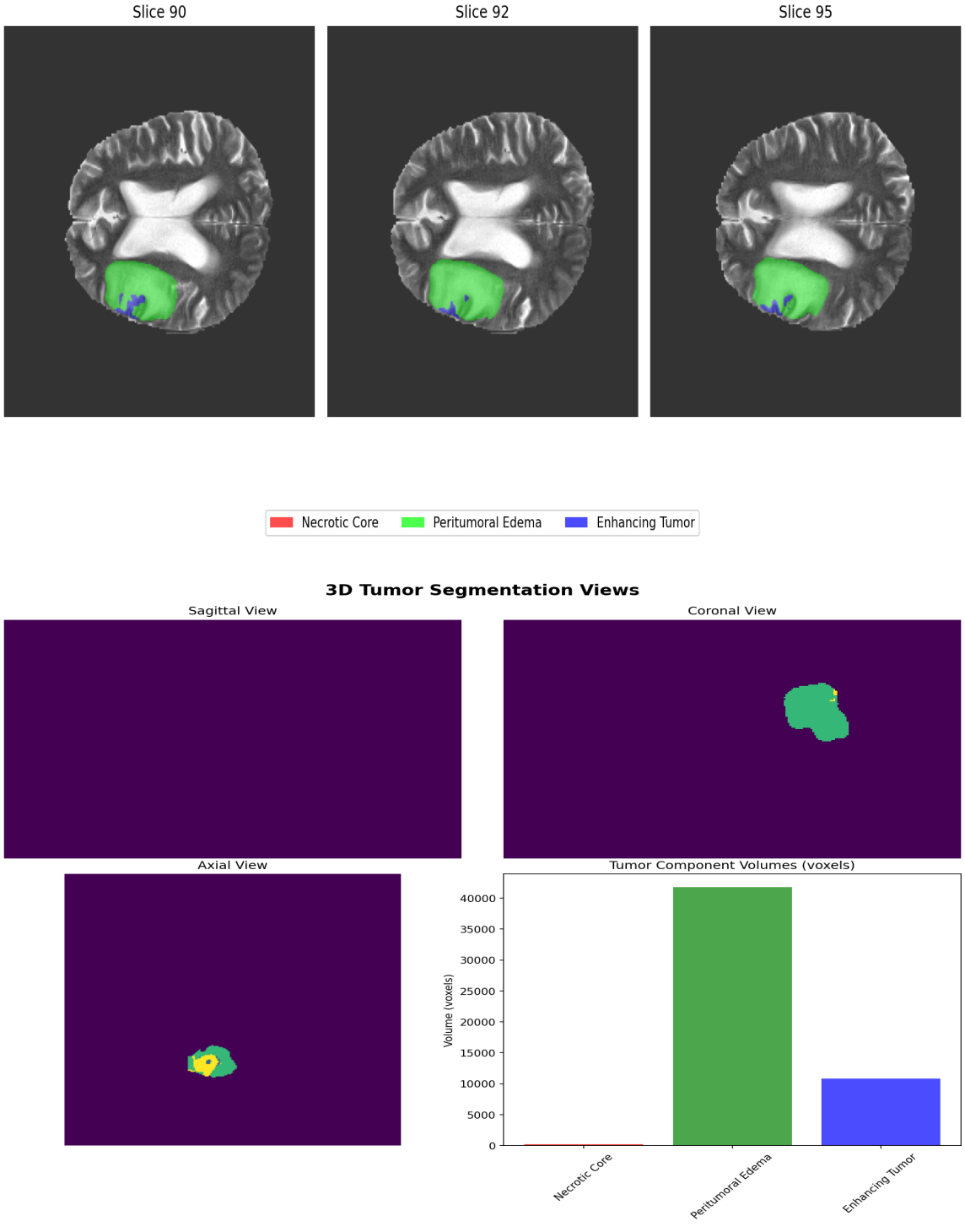
SEGMENTATION VISUALIZATIONS

FLAIR with Segmentation Overlay

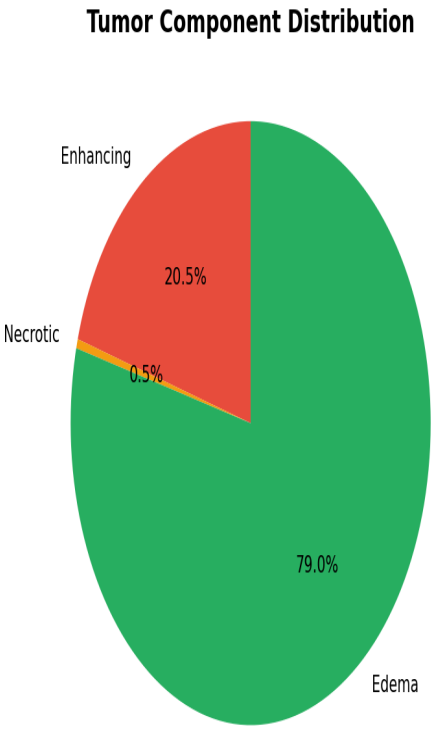


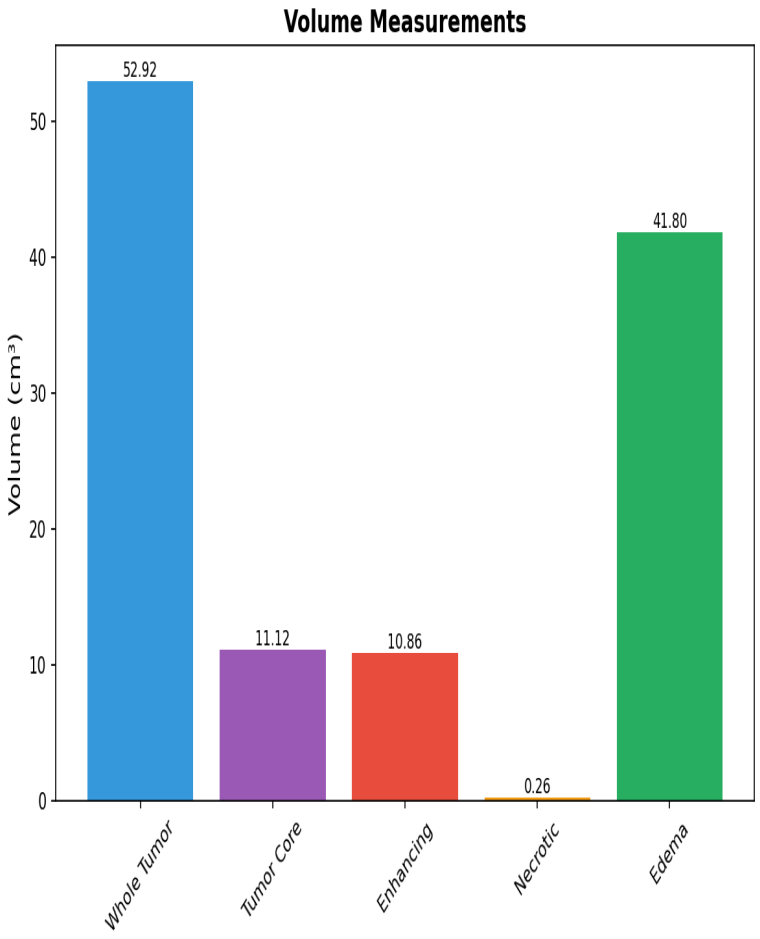
T1CE with Segmentation Overlay




T2 with Segmentation Overlay
Slice 90
Slice 92
Slice 95
Necrotic Core
Peritumoral Edema
Enhancing Tumor
3D Tumor Segmentation Views
Sagittal View
Coronal View
Axial View
Tumor Component Volumes (voxels)
Volume (voxels)
0
5000
10000
15000
20000
25000
30000
35000
40000
Necrotic Core
Peritumoral Edema
Enhancing Tumor

QUANTITATIVE ANALYSIS





Clinical Summary

Parameter	Value	Clinical Significance
Total Volume	52.92 cm³	very_large (>15 cmÂ³)
Max Diameter	62.0 mm	Surgical planning reference
Enhancement	20.5%	moderate (10-30%)
Location	right central	Functional considerations
Necrosis	0.5%	minimal (<10%)
Enhancement Present	yes	BBB disruption indicator
Necrosis Present	yes	Tissue viability marker
Edema Present	yes	Peritumoral involvement