

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 cm³). 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 cm³
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

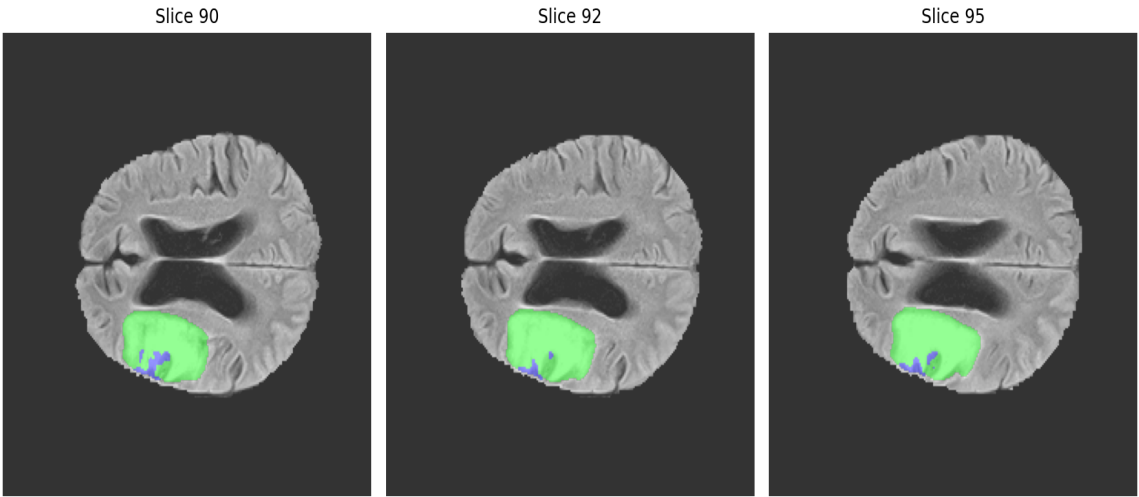
- Analysis Method: AI-powered 3D segmentation with multi-parametric MRI integration
- Image Quality: Adequate spatial resolution for reliable quantitative analysis
- Segmentation Confidence: High reliability for volume measurements and tissue classification
- Validation Status: Results pending clinical correlation and expert validation
- Processing Date: September 14, 2025 at 11:45 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.

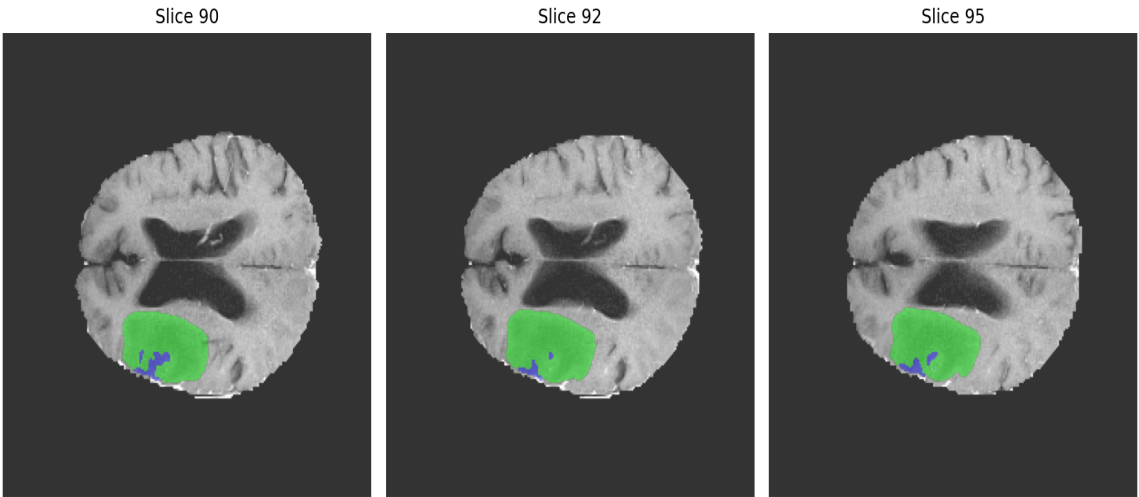
SEGMENTATION VISUALIZATIONS

FLAIR with Segmentation Overlay



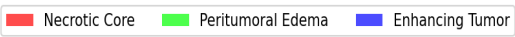
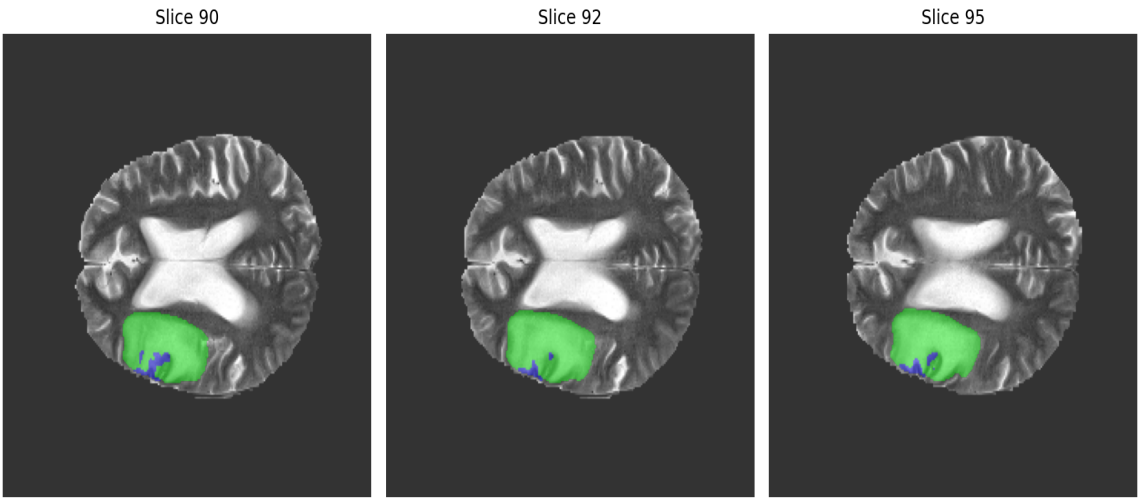
■ Necrotic Core ■ Peritumoral Edema ■ Enhancing Tumor

T1CE with Segmentation Overlay

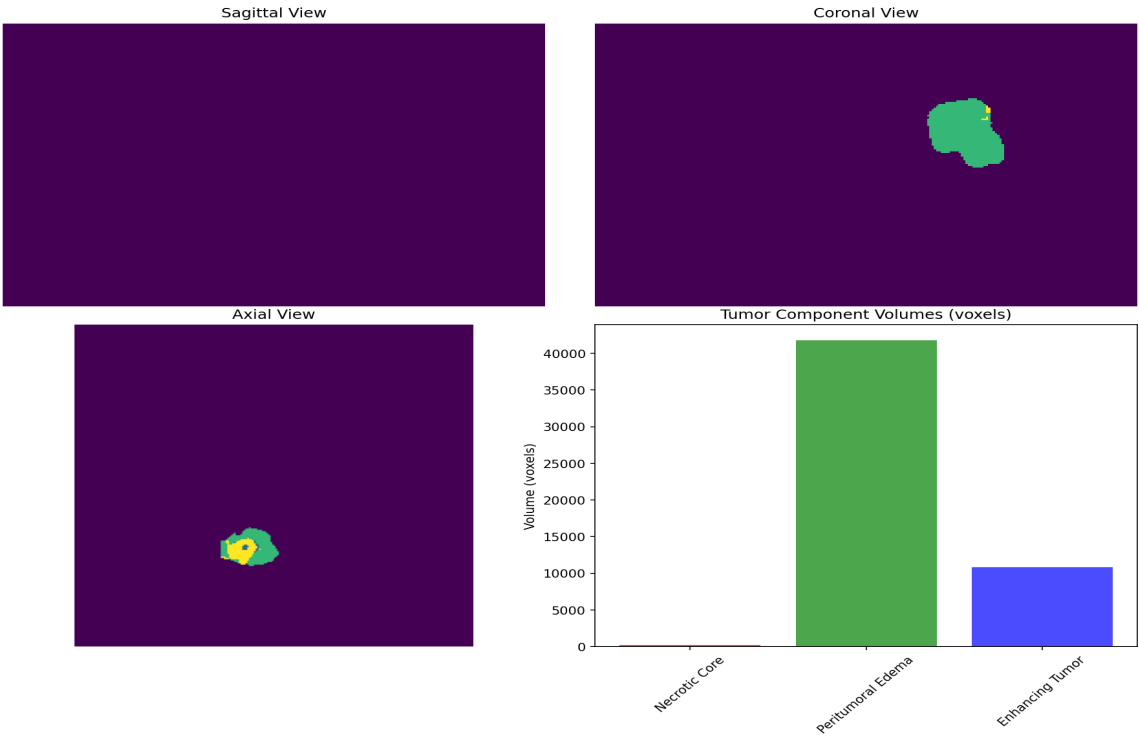


■ Necrotic Core ■ Peritumoral Edema ■ Enhancing Tumor

T2 with Segmentation Overlay

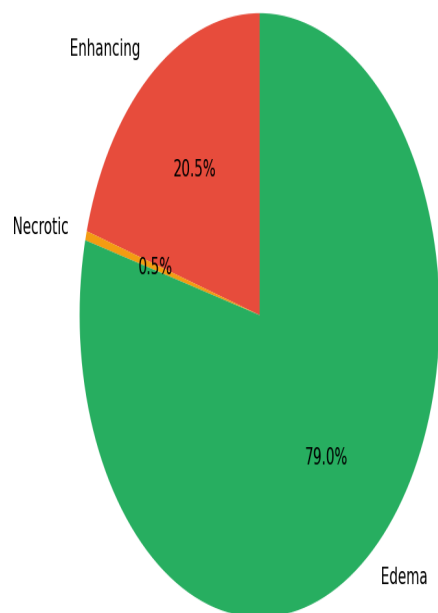


3D Tumor Segmentation Views

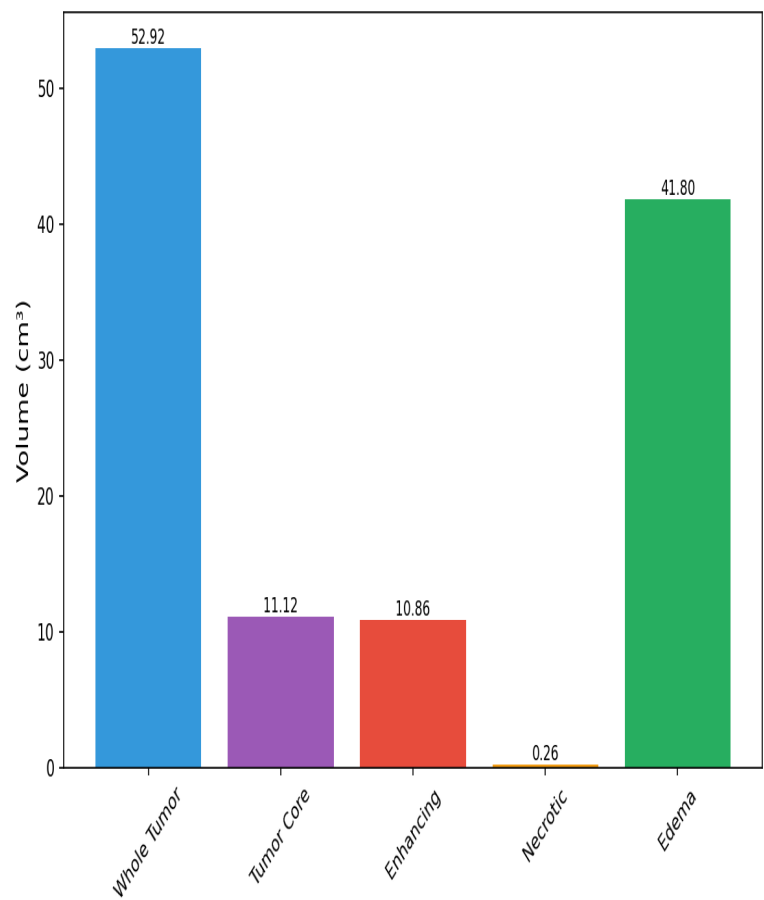


QUANTITATIVE ANALYSIS

Tumor Component Distribution



Volume Measurements



Clinical Summary

| Parameter | Value | Clinical Significance |
|---------------------|-----------------------|-----------------------------------|
| Total Volume | 52.92 cm ³ | very_large (>15 cm ³) |
| 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 |