Comparing 3D Tumor Detection: Surface Rendering vs Volume Rendering

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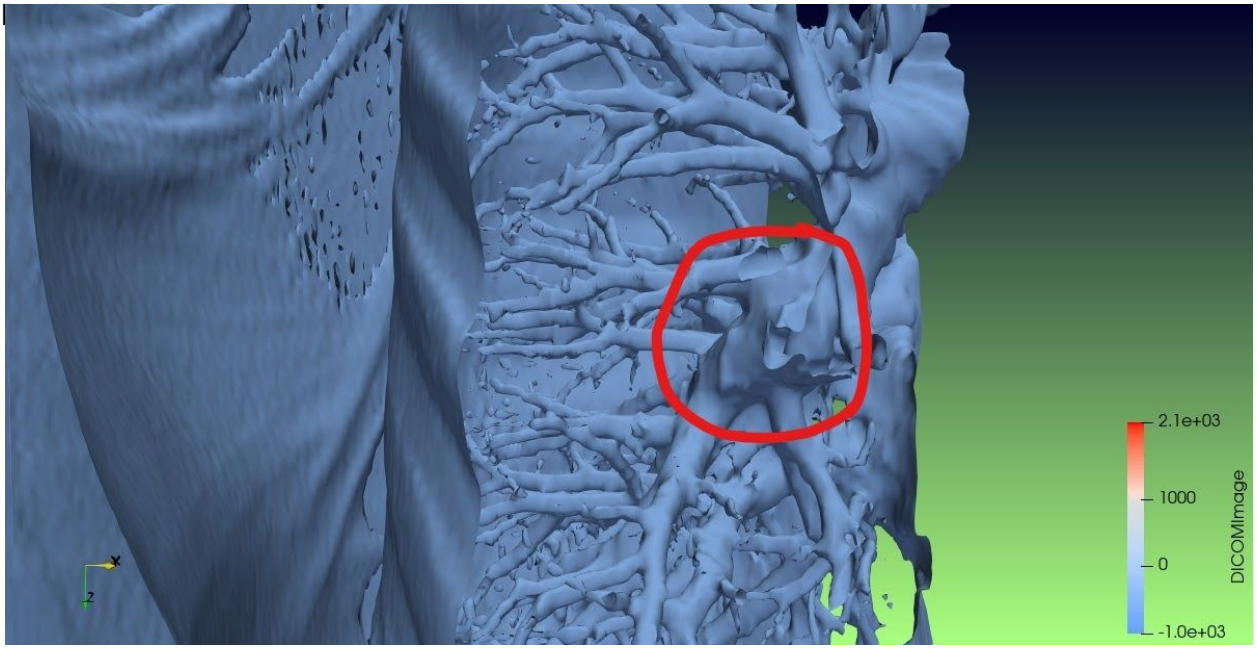
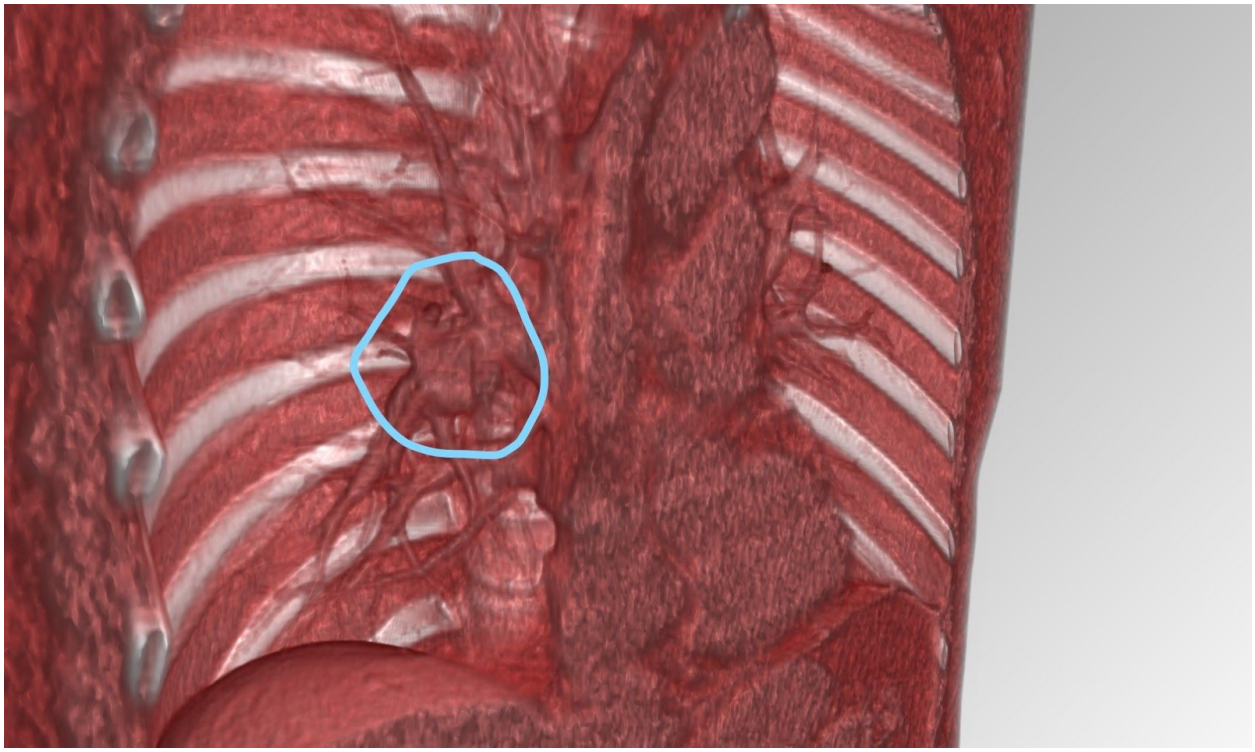
The purpose of this project was to compare two different rendering techniques to see which is better at tumor detection. I used surface rendering in paraview and volume rendering in voreen. Four sets of CT scans were used: one female with a benign tumor, one female with a malignant tumor, one male with a benign tumor, and one male with a malignant tumor. Eight total models were created. The scans used were from a study done at Cornell where they took 100 CT scans in which some had lungs with malignant tumors and lungs with benign tumors in which they would later insert fake tumors into the models to see if doctors could tell the difference. The CT scans used in this project were only from the scans with real tumors. After creating the following models, I concluded that volume rendering in Voreen was better as it made tumor detection easier by allowing for the bronchi in the lungs to be filtered out.



Benign Female: Voreen



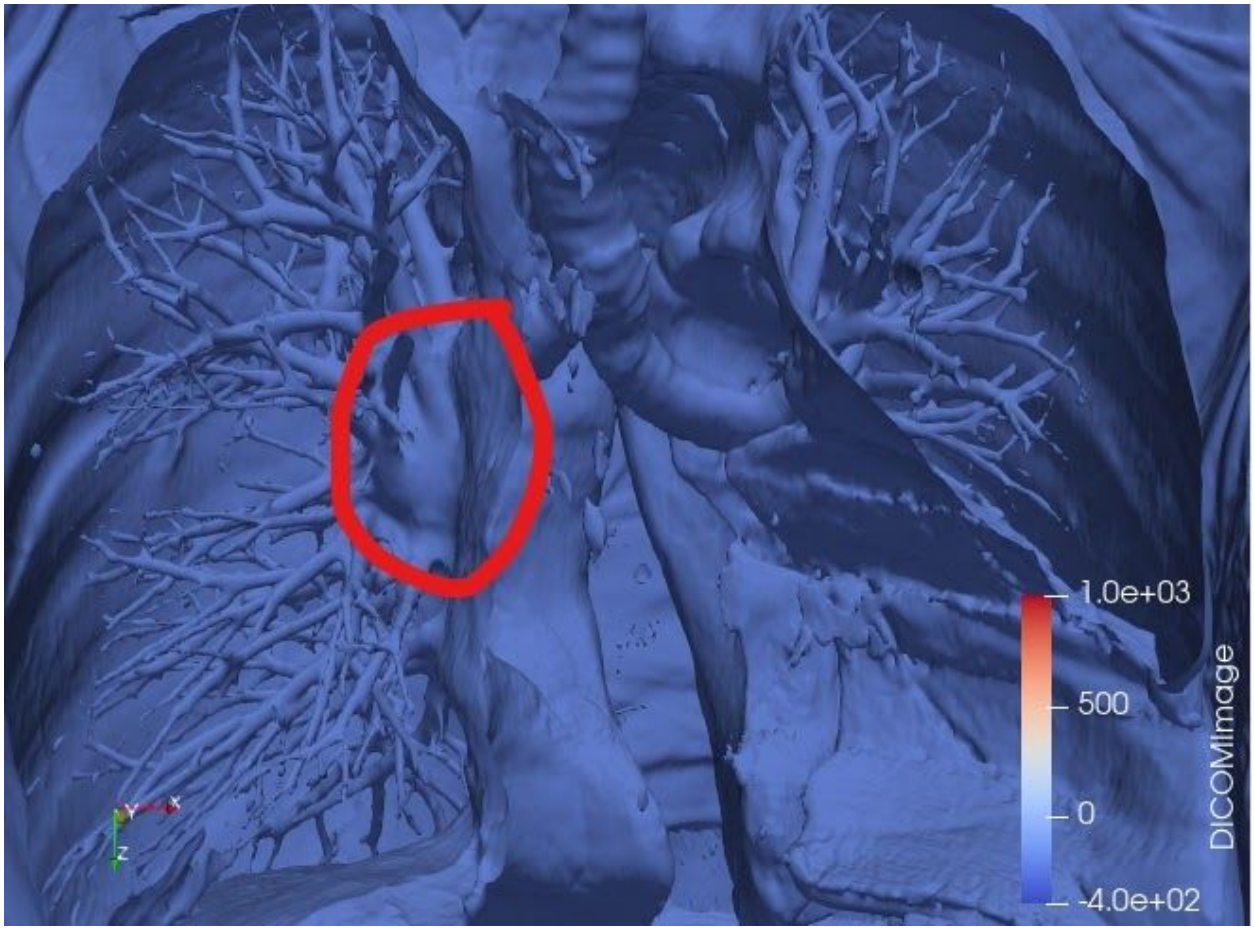
Malignant Female: Paraview

Malignant Female: Voreen

Benign Male: Paraview

Benign Male: Voreen

Malignant Male: Paraview



Malignant Male: Voreen