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## 1 Visualization using Clip

The values from lab 1 was tweaked slightly to achieve a similar

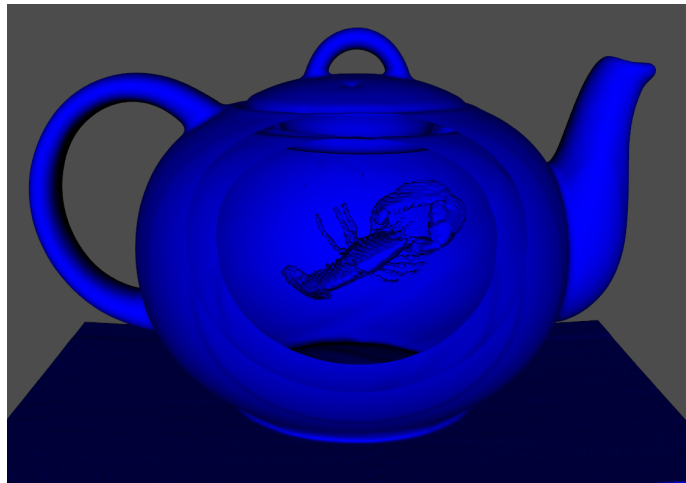


Figure 1:

## 2 Visualization using Contour

The values from lab 1 was tweaked slightly to achieve a similar

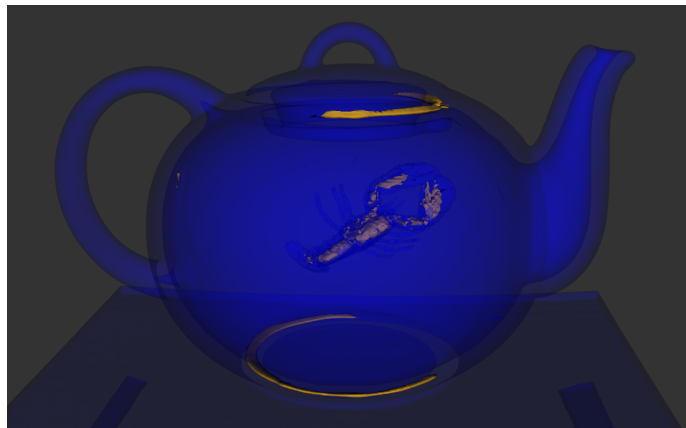


Figure 2: The teapot visualized using contour with values 30 (blue) and 130(yellow) along with an opacity value of 0.2 to see the lobster inside.

## Appendix A Clip visualization code

```
1 import vtk
2
3 # Read raw dataset
4 reader = vtk.vtkImageReader()
5 reader.SetFileName("../dataset/BostonTeapot.raw")
6 reader.SetDataByteOrderToBigEndian()
7 reader.SetNumberOfScalarComponents(1)
8 reader.SetFileDimensionality(3)
9 reader.SetDataExtent(0, 255, 0, 255, 0, 177)
10 reader.SetDataScalarTypeToUnsignedChar()
11 reader.Update()
12
13 contour = vtk.vtkContourFilter()
14 contour.SetInputConnection(reader.GetOutputPort())
15 contour.GenerateValues(2, 30, 255)
16
17
18 plane = vtk.vtkPlane()
19 plane.SetOrigin(160, 150, 140)
20 plane.SetNormal(0.0, -0.35, -0.9)
21
22 clipper = vtk.vtkClipPolyData()
23 clipper.SetInputConnection(contour.GetOutputPort())
24 clipper.SetClipFunction(plane)
25 clipper.SetValue(0)
26 clipper.Update()
27
28 mapper = vtk.vtkDataSetMapper()
29 mapper.SetInputConnection(clipper.GetOutputPort())
30
31 actor = vtk.vtkActor()
32 actor.SetMapper(mapper)
33 actor.GetProperty().SetColor(1.0, 1.0, 1.0)
34
35 renderer = vtk.vtkRenderer()
36 renderer.SetBackground(0.3, 0.3, 0.3)
37 renderer.AddActor(actor)
38
39 render_window = vtk.vtkRenderWindow()
40 render_window.SetWindowName("teapot")
41 render_window.SetSize(800, 800)
42 render_window.AddRenderer(renderer)
43
44 interactor = vtk.vtkRenderWindowInteractor()
45 interactor.SetRenderWindow(render_window)
46 interactor.Initialize()
47 interactor.SetInteractorStyle(vtk.vtkInteractorStyleTrackballCamera())
48 render_window.Render()
49 interactor.Start()
```

## Appendix B Contour visualization code

```
1 import vtk
```

```
2
3 # Read raw dataset
4 reader = vtk.vtkImageReader()
5 reader.SetFileName("../dataset/BostonTeapot.raw")
6 reader.SetDataByteOrderToBigEndian()
7 reader.SetNumberOfScalarComponents(1)
8 reader.SetFileDimensionality(3)
9 reader.SetDataExtent(0, 255, 0, 255, 0, 177)
10 reader.SetDataScalarTypeToUnsignedChar()
11 reader.Update()
12
13 contour1 = vtk.vtkContourFilter()
14 contour1.SetInputConnection(reader.GetOutputPort())
15 contour1.GenerateValues(2, 0.0, 30)
16
17 mapper1 = vtk.vtkPolyDataMapper()
18 mapper1.SetInputConnection(contour1.GetOutputPort())
19
20 actor1 = vtk.vtkActor()
21 actor1.SetMapper(mapper1)
22 actor1.GetProperty().SetColor(1.0, 1.0, 1.0)
23 actor1.GetProperty().SetOpacity(0.2)
24
25 contour2 = vtk.vtkContourFilter()
26 contour2.SetInputConnection(reader.GetOutputPort())
27 contour2.GenerateValues(2, 0.0, 130)
28
29 mapper2 = vtk.vtkPolyDataMapper()
30 mapper2.SetInputConnection(contour2.GetOutputPort())
31
32 actor2 = vtk.vtkActor()
33 actor2.SetMapper(mapper2)
34 actor2.GetProperty().SetColor(1, 0.75, 0)
35 actor2.GetMapper().ScalarVisibilityOff()
36
37 renderer = vtk.vtkRenderer()
38 renderer.SetBackground(0.3, 0.3, 0.3)
39 renderer.AddActor(actor1)
40 renderer.AddActor(actor2)
41
42 render_window = vtk.vtkRenderWindow()
43 render_window.SetWindowName("teapot")
44 render_window.SetSize(800, 800)
45 render_window.AddRenderer(renderer)
46
47 interactor = vtk.vtkRenderWindowInteractor()
48 interactor.SetRenderWindow(render_window)
49 interactor.Initialize()
50 interactor.SetInteractorStyle(vtk.vtkInteractorStyleTrackballCamera
    ())
51 render_window.Render()
52 interactor.Start()
```