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In [1]: import itk

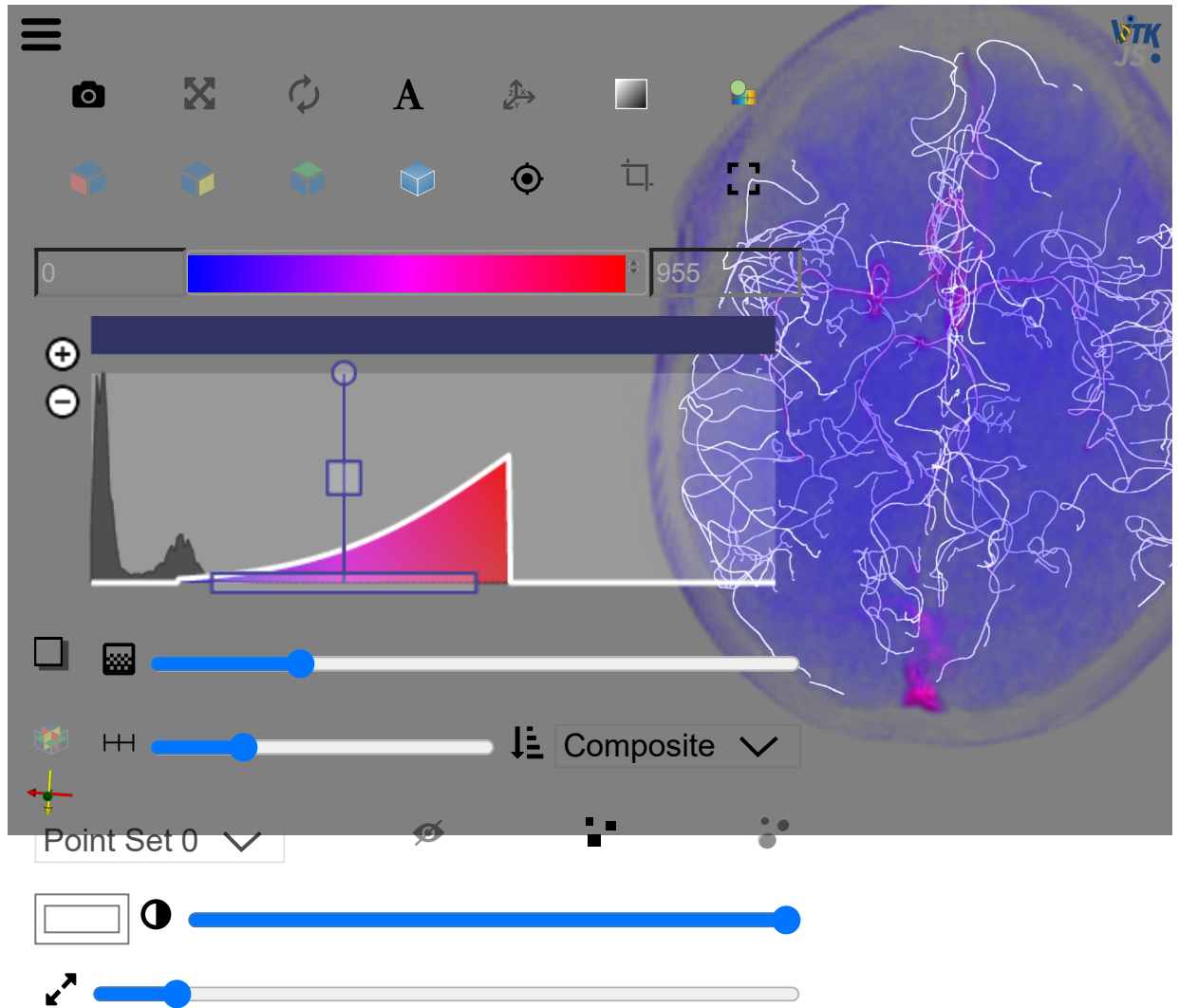
        from itkwidgets import view
```

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In [2]: PixelType = itk.F
        Dimension = 3

        # Read tre file
        tubesReader = itk.SpatialObjectReader[Dimension].New()
        tubesReader.SetFileName("Data/MRI-Normals/Normal071-VascularNetwork.tre")
        tubesReader.Update()
        tubes = tubesReader.GetGroup()

        # Read mra image
        mraReader = itk.ImageFileReader[itk.Image[PixelType, Dimension]].New()
        mraReader.SetFileName("Data/MRI-Normals/Normal071-MRA.mha")
        mraReader.Update()
        mra = mraReader.GetOutput()
```

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In [3]: view(image=mra, point_sets=tubes)
```



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In [5]: print("Number of objects = ", tubes.GetNumberOfChildren())

sobj = tubes.GetChildren(0, "VesselTube")
for tube_num in range(len(sobj)):
    tube = itk.down_cast(sobj[tube_num])
    tube_points = tube.GetPoints()
    num_points = len(tube_points)
    print("Enlarging the", num_points, "points in tube", tube_num)
    for point_num in range(num_points):
        r = tube_points[point_num].GetRadiusInObjectSpace()
        r *= 2
        tube_points[point_num].SetRadiusInObjectSpace(r)
```

```
Number of objects = 265
Enlarging the 4330 points in tube 0
Enlarging the 3404 points in tube 1
Enlarging the 2776 points in tube 2
Enlarging the 390 points in tube 3
Enlarging the 64 points in tube 4
Enlarging the 230 points in tube 5
Enlarging the 1406 points in tube 6
Enlarging the 273 points in tube 7
Enlarging the 134 points in tube 8
Enlarging the 250 points in tube 9
Enlarging the 214 points in tube 10
Enlarging the 429 points in tube 11
Enlarging the 224 points in tube 12
Enlarging the 141 points in tube 13
Enlarging the 117 points in tube 14
Enlarging the 218 points in tube 15
Enlarging the 68 points in tube 16
Enlarging the 213 points in tube 17
Enlarging the 170 points in tube 18
Enlarging the 170 points in tube 19
```

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In [6]: tubesWriter = itk.SpatialObjectWriter[Dimension].New()
tubesWriter.SetInput(tubes)
tubesWriter.SetFileName("Data/MRI-Normals/Normal071-VascularNetwork-Enlarged.tre")
tubesWriter.Update()
```

```
In [7]: # Verifyify
tubesReader = itk.SpatialObjectReader[Dimension].New()
tubesReader.SetFileName("Data/MRI-Normals/Normal071-VascularNetwork.tre")
tubesReader.Update()
tubes_org = tubesReader.GetGroup()

tubesReader = itk.SpatialObjectReader[Dimension].New()
tubesReader.SetFileName("Data/MRI-Normals/Normal071-VascularNetwork-Enlarged.tre")
tubesReader.Update()
tubes_new = tubesReader.GetGroup()

sobj_org = tubes_org.GetChildren(0, "VesselTube")
sobj_new = tubes_new.GetChildren(0, "VesselTube")

tube_org = itk.down_cast(sobj_org[0])
tube_new = itk.down_cast(sobj_new[0])

r_org = tube_org.GetPoints()[1].GetRadiusInObjectSpace()
r_new = tube_new.GetPoints()[1].GetRadiusInObjectSpace()

print("Old =", r_org, " ->  New =", r_new)
```

Old = 1.277065063019514 -> New = 2.5541300773620605