read mesh and make Graphics primitives

In[1]:=
```
fn = "~/NACA0012/NACA0012.msh";
```

In[2]:=
```
stream1 = OpenRead[fn];
{n1, n2, n3} = Read[stream1, {Number, Number, Number}]
```

Out[3]=
```
{3027, 5862, 192}
```

In[4]:=
```
frm = Table[{Real, Real, Number}, {n1}];
```

In[5]:=
```
p = Read[stream1, frm];
```

In[6]:=
```
p1 = Table[{p[[i, 1]], p[[i, 2]]}, {i, Length[p]}];
```

In[7]:=
```
frm = Table[{Number, Number, Number, Number}, {n2}];
```

In[8]:=
```
tr = Read[stream1, frm];
```

In[9]:=
```
tr1 = Table[{tr[[i, 1]], tr[[i, 2]], tr[[i, 3]], tr[[i, 1]]}, {i, Length[tr]}];
```

In[10]:=
```
frm = Table[{Number, Number, Number}, {n3}];
```

In[11]:=
```
vt = Read[stream1, frm];
```

In[12]:=
```
Close[stream1];
```

In[13]:=
```
p2 = Map[p1[[#]] &, tr1];
```

In[14]:=
```
p2[[1]]
```

Out[14]=
```
{{0.938753, -0.0623084}, {0.954796, -0.0621637},
 {0.948417, -0.0423835}, {0.938753, -0.0623084}}
```

In[15]:=
```
lp1 = Map[Line, p2];
```

In[16]:=
```
Show[Graphics[lp1], AspectRatio → 1, PlotRange → All];
```

In[17]:=
```
Show[Graphics[lp1], AspectRatio → 1 / 1.5, PlotRange → {{-.25, 1.25}, {-.5, .5}}];
```

Read values of the solution

In[18]:=
```
fn = "~/NACA0012/NACA0012.out";
```

In[19]:=
```
stream1 = OpenRead[fn];
```

In[20]:=
```
n4 = Read[stream1, Number]
```

Out[20]=
```
3027
```

In[21]:=
```
frm = Table[Real, {n4}];
```

In[22]:=
```
r = Read[stream1, frm];
```

In[23]:=
```
Close[stream1];
```

In[24]:=
```
Dimensions[r]
```
Out[24]=
```
{3027}
```

Normalization of values of solution

In[25]:=
```
m1 = Min[r];
```

In[26]:=
```
r = r - m1;
```

In[27]:=
```
m1 = Max[r];
```

In[28]:=
```
r = r / m1;
```

In[29]:=
```
r2 = Table[(r[[tr[[i, 1]]]] + r[[tr[[i, 2]]]] + r[[tr[[i, 3]]]]) / 3.0, {i, Length[tr]}];
```

Make Colored polygon

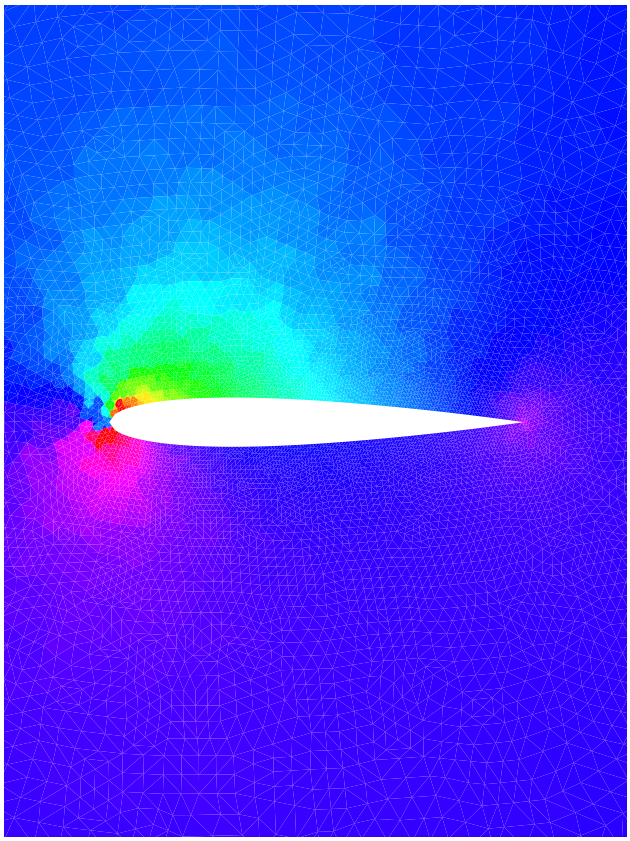
In[30]:=
```
p3 = Table[{(p1[[tr[[i, 1]]]] + p1[[tr[[i, 2]]]]) * 0.5, (p1[[tr[[i, 2]]]] + p1[[tr[[i, 3]]]]) * 0.5,
     (p1[[tr[[i, 3]]]] + p1[[tr[[i, 1]]]]) * 0.5}, {i, Length[tr]}];
```

In[31]:=
```
plg = Table[{{Hue[r[[tr[[i, 1]]]]], Polygon[{p2[[i, 1]], p3[[i, 1]], p3[[i, 3]]}]},
     {Hue[r2[[i]]], Polygon[{p3[[i, 1]], p3[[i, 2]], p3[[i, 3]]}]}, {Hue[r[[tr[[i, 2]]]]],
      Polygon[{p2[[i, 2]], p3[[i, 2]], p3[[i, 1]]}]}, {Hue[r[[tr[[i, 3]]]]],
      Polygon[{p2[[i, 3]], p3[[i, 3]], p3[[i, 2]]}]}}, {i, Length[tr]}];
```

Draw the result

In[34]:=
```
Show[Graphics[plg], PlotRange → {{-.25, 1.25}, {-1, 1}}, AspectRatio → 2 / 1.5]
```

Out[34]=



In[35]:=
```
Show[Graphics[plg], PlotRange → All, AspectRatio → 1]
```

Out[35]=