Java 2D&3D Graphics Project1

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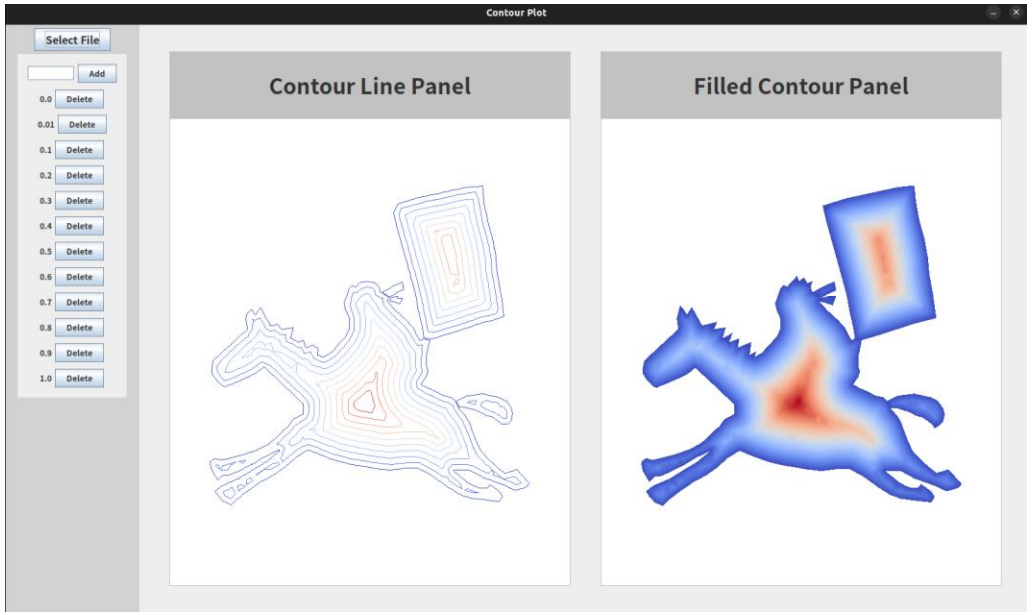
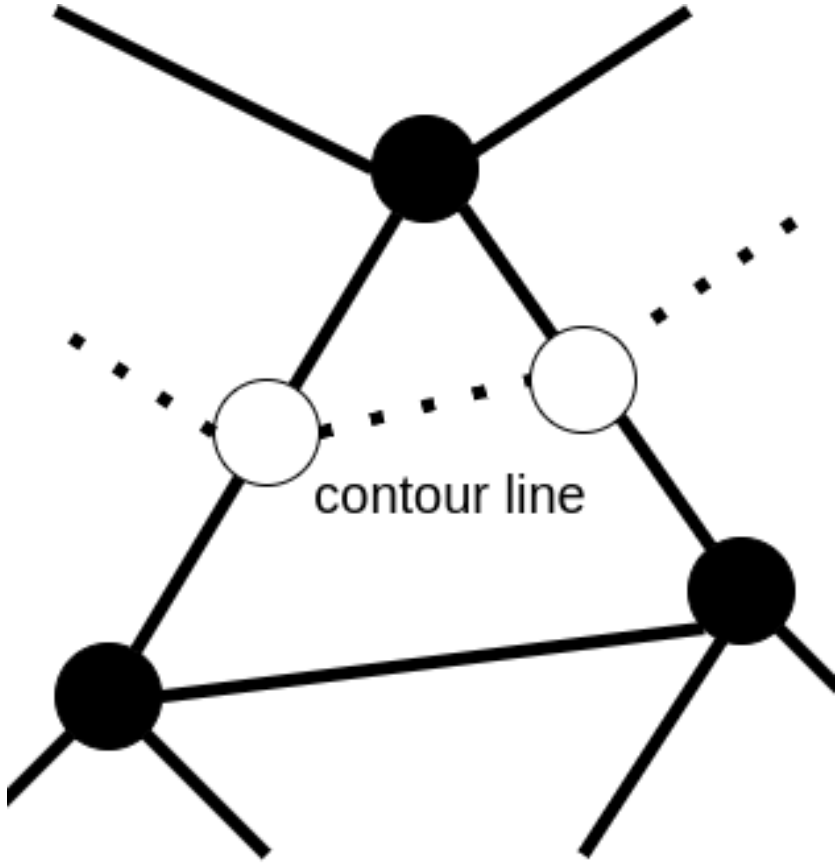
Development Environment

- Read vertex and triangle data from VTK file
- Read colormap from provided Cool Warm csv file
- GUI built with Swing



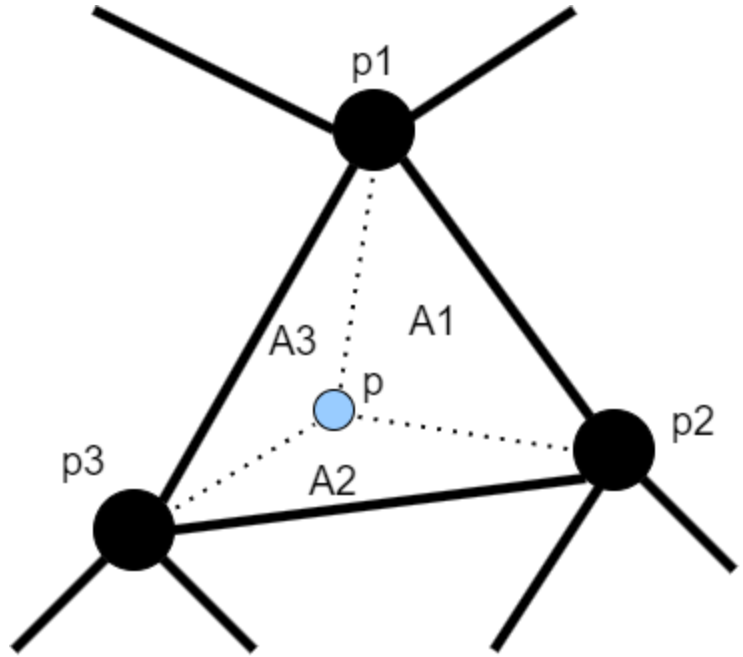
Contour plotting algorithm

- In a mesh triangle, calculate the number of intersections between all sides of the triangle and isovalue.
- The scalar value of the vertex is compared to the isovalue to calculate where the contour passes through the triangle.
- If the number of intersections between triangle and isovalue is 2, contour lines connecting the intersections are drawn.
- The color of the contour line is determined by the closest scalar value from the color map based on the isovalue.



Filled contour plotting algorithm

- In the mesh triangle, determine the color for the vertex **p** included in the triangle.
- Find the area ratio of the triangle formed by vertex **p** and the two vertices of the triangle.
- Add the color components of each vertex, red, green, and blue, weighted by area ratio. This determines the color of the given vertex **p**.



Demo