

Exercise 4 – Advanced Topics in HCI (MMI 2)

Information Visualization

3. Visualizing Focus and Context (10 Points – July 21st 2008):

Implement two different magnification views based on the given prototype on the tutorial homepage:

- A lens that shows the region of interest in a higher resolution. The quadratic lens hence overlaps with regions and does not show the context next to the focus region.
- A radial fisheye using the transfer function $T(x) = \frac{(d+1) \cdot x}{d \cdot x + 1}$; The distortion factor d relates to the magnification factor m by $d = m - 1$;

Start with the implementation of the lens view. The lens is just a quadratic area on the screen which magnifies the area of the picture where the last mouse click occurred.

To implement the fisheye view, use normalized coordinates. This means that the source and the destination rectangle have coordinate values in the range $[-1,1]$;

Use the given transformation function $T(x) = \frac{(d+1) \cdot x}{d \cdot x + 1}$; **Attention:** For the implementation the inverse transformation function $T^{-1}(x)$ is needed.

The transformation functions in the plane are then defined by:

$$T_x(x, y) = T^{-1}(x) \cdot (1 - y^2) + x \cdot y^2;$$

$$T_y(x, y) = T^{-1}(y) \cdot (1 - x^2) + y \cdot x^2;$$

Submit a *.zip file, that contains the *.java, the *.class and the image file. Send this *.zip file to sebastian.boring@ifi.lmu.de by **Monday, July 21st 2008 11:59 a.m.**