

Protocol: Scientific Visualization (SS 2016)

Examiner: Prof. Ertl

Date: 30.09.2016

Preparation time: 2 weeks

Note: 1.3

If you attended his lectures you already know the first one :D

He started with the Visualization pipeline (I briefly discussed main steps). And focused first on filtering (I named clipping, cropping, slicing, projection and specified difference between them). Then he asked about Fourier transform, convolution and multiplication, box filter, time and frequency domain. Also he asked what kind of interpolation would it be on box filter and triangle filter.

Next question was – what would I need if he asks me to visualize smth (grid, time, data domain etc.). He asked me to say about difference for structured and unstructured grid and how we can store the grid, I named two approaches.

He asked me about scattered data and how can I perform interpolation on it. I spoke about radial-based interpolation. Then he also asked about Voronoi diagrams and Delaune, how to perform delaune, how can we check whether triangulation satisfies delaune properties.

Then he asked about interpolation on grids – bilinear, barycentric coordinates. How do we do interpolation with barycentric coordinates. Why do we need three points to interpolate on a triangle.

He asked how many points you need for tricubic and for cubic interpolation.

After that he focused on the last two lectures: tensor field visualization, three types of anisotropy. Where do we get lambda values (from Jacobian). What are separatrices. Then he moved to a vector field visualization and I told him about characteristic lines, repelling nodes, repelling focus, saddle point.

Also we talked about Numerical integration of ODE (Euler, Runge-Kutta, advantages/disadvantages, how Runge-Kutta works). He asked about particle tracing as well in details, stencil walk and why do we need it.

I strongly recommend remembering questions he asks on the beginning of each lecture – those “recap” questions were 1/3 of exam questions.

Hope it helps.