MEDICAL VISUALIZATION

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- <u>Interactive volume rendering using multi-dimensional transfer</u> <u>functions and direct manipulation widgets</u>, Joe Kniss, Gordon Kindlmann, and Charles Hansen, IEEE Visualization, pp. 255-262, 2001
- <u>The transfer function bake-off</u>, Hanspeter Pfister, Bill Lorensen, Chandrajit Bajaj, Gordon Kindlmann, Will Schroeder, Lisa S. Avila, Raghu K. Machiraju, and Jinho Lee, CG&A, May/June 2001 (vol. 21 no. 3), pp. 16-22

Interactive Volume Rendering Using Multi-Dimensional Transfer Functions and Direct Manipulation Widgets

- How to use modern graphics hardware
- •1D transfer functions vs. Multi dimensional transfer functions
- The role of the transfer function in volume rendering
- Why are the Multi-dimensional transfer functions interesting?



1D vs.2D transfer function

2D vs.3D transfer function

Clipping plane Widget



•The Transfer Function Bake-Off

The four approaches:

- **trial and error**, with minimum computer aid (Will Schroeder)
- •data-centric, with no underlying assumed model (Chandrajit Bajaj)
- •data-centric, using an underlying data model (Gordon Kindlmann)
- image-centric, using organized sampling (Hanspeter Pfister).

Data sets



1 The tooth data set modeled with isosurfaces.



2 The sheep heart modeled with two isosurfaces.



3 The segmented MRI knee.

1.Rendering of the dataset through trial and error



2. Data-centric, without data model





3. Data-centric, with data model







4. Image-centric, using organized sampling









PAPER 1 VS. PAPER 2

- •Lots of References (Paper 1)
- •Many unclarified and complex descriptions (Paper 1)
- •Better explanation (Paper 2)
- •The explanations are mostly with images (Paper 2)

