Visualization
– Volume Rendering (Questions)

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Possible Questions

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- input: data values (image intensities)
- output: color & opacity (RGBA)
- typically 1D; more complex 2D approaches exist as well
- show/hide certain structures -> data exploration

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  - **Pre-Classification:** Application of TF to all edge points in the filter range (result: RGBA quadruple); afterwards: (tri)linear interpolation of this quadruple
  - **Post-Classification**: Interpolation of the intensity values from the data (e.g., Hounsfield Units); afterwards: application of transfer function to the interpolated result (pre-integrated for quality enhancement)

Possible Questions

Schematically illustrate the basic *“Ray-Casting”* procedure.

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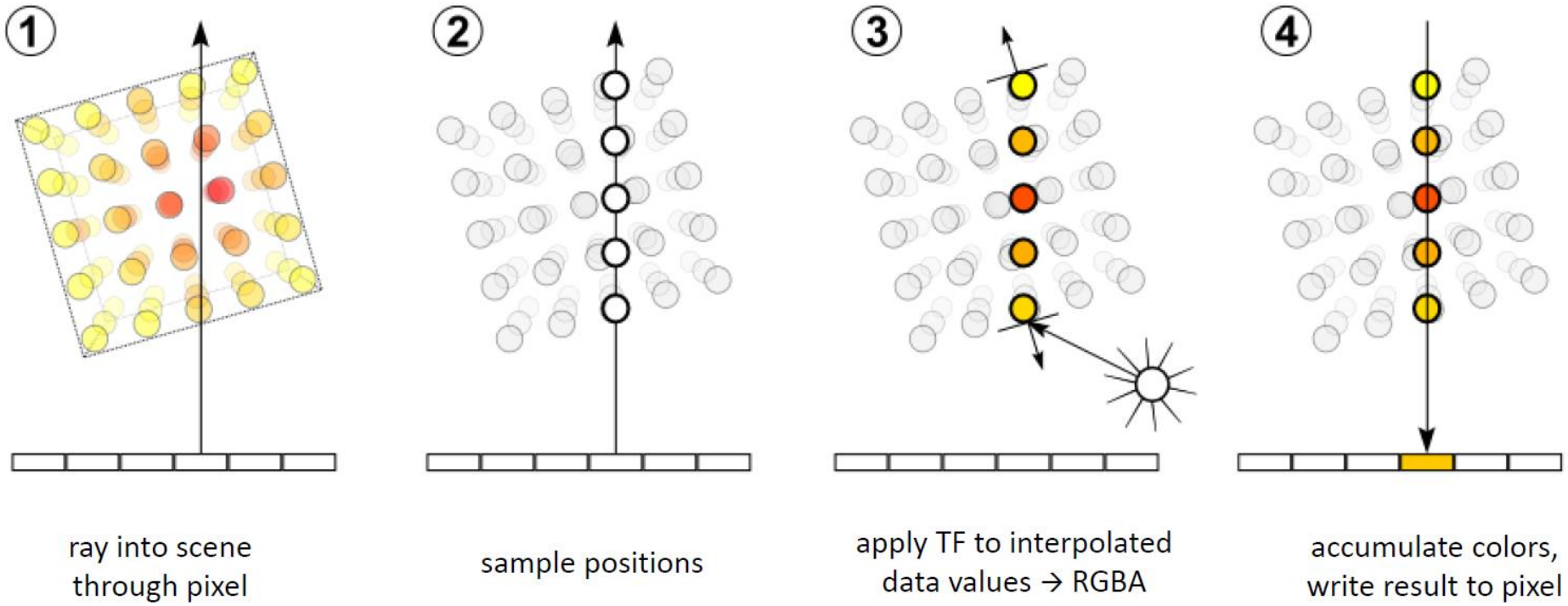

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- **Early Ray Termination:**
  - Stop when full opacity is reached
- **Adaptive Sampling / Empty Space Skipping:**
  - Step size depends on image content
    - Low opacity
    - Only few contribution to pixel color
    - Increase step size and vice versa

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First Hit	First voxel	Illustration of surface
Closest Vessel Projection (CVP)	Per ray: first local maximum above a threshold value	Illustration of Vessels
Maximum (minimum) Intensity Projection (M(m)IP)	Per ray: brightest (darkest) hit voxel	Illustration of vessels, noisy data