We introduce a public domain library for volume rendering. The code is platform independent, and when possible, leverages hardware to expedite computation. It features a dataflow interface allowing the user to piece together complex shaders from simple pieces, without focusing on the low-level hardware interface. The technology will be applied to collaborations with the 3D Slicer project (Brigham & Women’s Hospital) and George Chen (MGH).

Cut-away of the thoracic cavity, with multi-dimensional transfer function enhancement of bronchiols, shown on SCI’s display wall (data courtesy George Chen).

A dataflow interface for programmable graphics is provided within SCIRun. Alternatively, the user can interface to the system through a programmer API. At run-time, the library modules employed by the user are assembled by our graphics assembler, and downloaded to the graphics hardware.

Our library will provide volume rendering support to 3D Slicer, a volume data analysis toolkit from Brigham & Women’s Hospital and M.I.T.

A researcher working with scientific data may wish to experiment with different rendering styles to pull out the salient features. However, it is not typically straightforward to implement these algorithms on graphics hardware. Our system allows the user to build volume rendering shaders from semantically meaningful components. The rightmost figure shows the dataflow network that would be used to produce the non-photorealistic center image.

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