Jacob Leboeuf
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Dr. Haim Levkowitz
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Summary

This article discusses the advantages of using direct and multi-volume rendering with three-dimensional visualizations of data. The authors discuss its usage in dynamic shader generation, allowing hardware shading to be less rigid and easy to accomplish, enough so that those with limited or no shader programming experience can still have success. On top of the solution they've developed, the authors also described their idea in a way that is easily understandable for those unfamiliar with the topics, providing helpful definitions of subjects they subsequently go deeper into. Pseudocode is also provided for those more familiar with the subject at hand, or for those more interested in how its concept can be used specifically. They note that it solves the rendering problems caused by using illumination-level intermixing through a ray-casting algorithm that separates the multi-volume scene into layers, and rendering these layers based off of volume combinations. Such an algorithm was tested through medical data sets, and the authors look to continue observing their algorithm's impact on other kinds of multi-volume techniques.