

Using Java 3D to Enhance Javapeño

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ABSTRACT

Javapeño is a Java-based data visualization package that is part of Oak Ridge National Laboratory's SCALE software suite. Javapeño provides a graphical interface that allows the user to visualize data in customizable plots. Javapeño was created by Dr. Bradley Rearden in 2001 as a port from plotting software called SenPlot. Originally supporting only sensitivity data from the TSUNAMI modules of SCALE, Javapeño has been improved to support additional data types. Currently, Javapeño enables visualization of data generated from SCALE modules: TSUNAMI, SMORES, KMART, and XSDRN-PM, as well as a generic 2D data type. Sponsors of SCALE development have requested that Javapeño be expanded to support visualizing neutron and gamma cross-section data in the AMPX format and cross-section-covariance data in the COVERX format. For this project these new data types required adding three dimensional (3D) plotting capabilities to Javapeño. To maintain cross-platform compatibility Javapeño's 3D plotting engine uses the OpenGL version of Java 3D, an open source Java extension. Javapeño's 3D engine is an extensively modified version of FreeHEP's Lego Plot application. After developing the 3D engine, support was added for the COVERX data type. There were conflicts with the existing methods implemented in Javapeño and the way Java handles Java 3D objects. Java 3D objects are treated as heavy-weight objects, while the rest of Javapeño is light-weight. In Java, heavy-weight objects are always placed on top of light-weight objects, even when they are not active. Thus, unless modified, the new 3D plotting capability would prevent using the existing 2D plotting capabilities of Javapeño. To address this conflict, a new interface and window manager is being created. The enhanced version of Javapeño has been released as an internal beta. Support for the AMPX data type and the new interface are under development.

VITA

Aaron Fleckenstein received his Bachelor of Science in Engineering degree in computer engineering from Western Michigan University. Aaron plans to start graduate studies in computer science this fall at the University of Tennessee-Knoxville. In his spare time he can be found reading, hiking, or playing Civilization IV.