March 2016

Data Analysis Services Group - *March 2016*

News and Accomplishments

VAPOR Project

Project information is available at: http://www.vapor.ucar.edu

WASP Award:

Scott's main focus in March was finishing the parallel implementation of the Visit plugin for WASP data. This involved installing a new version of Visit onto Geyser and applying MPI commands to run successfully.The biggest obstacle he faced was in applying the correct orientation to non-block aligned segments at the edges of Visit's domain. He was initially under the impression that the data being returned from the WASP API started with valid values, followed by padded values that were outside of the domain. In actuality, valid data are commingled with invalid data that lies outside the region. This was not obvious due to the fact that the invalid data closely resembled the valid data due to the wavelet transform. In many other applications, invalid data values are orders of magnitude away from valid values.

Another challenge he faced was getting a debugger to run with Visit. He experimented with GDB, LLDB, and Visual Studio before finding that Valgrind played nicely with visit plugins.

KISTI Award:

John responded a number of minor revision requests from KISTI for proposal submitted last month. The proposal is now being reviewed by KISTI management. John also submitted a successful application to the new CISL Visitor Program to bring over a visitor from KISTI this summer; Dongmin Jang is a regional ocean modeler.

2.x Development:

3.x Development:

- We reviewed several usability issues with the 3.0 GUI. Alan implemented most of the desired changes but there were two issues (region control and mouse mode control) that we did not determine how they should best be changed.
- Alan refactored the steady flow code to work with vapor 3.0, in preparation for a future code review. The streamlines feature may be optionally built, but it is not currently planned for the first 3.0 release.
- John completed developer documentation for the CurvlinearGrid and KDTree classes developed last month.
- John began work on migrating the Image and 2D data visualizers from VAPOR 2.5 to 3.0. Most of the code will be substantially refactored to improve the code structure, and help ease migration to OpenGL 3.x from the current OpenGL 2.0 specification.
- Scott produced a mockup of the image renderer subtabs and implemented them. He started working on the ImageParams class, however John said that he would be implementing that along with the ImageRenderer. Scott began the implementation of the imageEventRouter instead.

Administrative:

John gave an overview presentation of VAPOR team activities to the TDD management team. The motivation for this talk was to encourage further collaboration between the VAPOR team and TDD.

John opened an SEIII position to replace Alan Norton. Several applicants were interviewed by phone, and later by a panel made up of John, Alan, and Rory Kelly. John also opened student assistant position.

John authored sections on VAPOR for the document being prepared for the NSF Site Visit Team arriving in May.

The Vapor team met with the NCL team to give an update on how Vapor has advanced over the years. Scott gave a demonstration of its new features as well as some of the old ones to the NCL team during the meeting.

Education and Outreach:

John is the program chair for this years DOE Computer Graphics Forum (DOECGF). John issued a CFP to the community for talks for the three day conference.

Samuel Li, our PhD student visitor from U. of Oregon completed his visit and returned to Oregon. Samuel completed his research on time-varying data compression and co-authored a paper for IEEE Vis before heading home.

In preparation for an upcoming webinar Scott set up an account to use XSEDE supercomputer resources. He then tested the VAPOR installation on Stampede for his webinar in June.

Software Research Projects

Feature Tracking:

Climate data compression:

Samuel's visit came to an end before a paper could be put together on our climate ensemble experiments. However, the majority of the research is complete and the team will continue to meet via video conf. calls until paper can be authored.

Production Visualization Services & Consulting

Scott continued to meet with Joanie Kleypas and Frederic Castruccio about their CT-ROMS research and what was worth discussing in his visualization. He worked on testing the limits of what the HPC Futures Lab could render in terms of flow with its 60GB of memory. He also worked on finding ways to demonstrate flow without using flow, such as highly populating the barbs renderer.

ASD Support

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Publications, Papers & Presentations

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Systems Projects

Data Services

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Accounting & Statistics

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Security & Administration

- xxx

System Monitoring

- xxx

System Support

ML - Data Analysis & Visualization Clusters

- xxx

GLADE Storage Cluster

- xxx

Data Transfer Cluster

- xxx

Experimental Clusters

- xxx

Test Clusters

Storage Usage Statistics

Other

- xxx