Information Science and Technology Seminar Speaker Series

Randal Burns
Johns Hopkins University

The Open Connectome Project: A Big Data Architecture for the BRAIN Initiative

Wednesday, June 26, 2013

3:00 - 4:00 PM

TA-3, Bldg. 1690, Room 102 (CNLS Conference Room)

Abstract: High-throughput imaging instruments that generate more than 1TB of data per day have created a "Big Data" crisis in neuroscience in which the size and complexity of data exceed the capability of labs to manage it. The Open Connectome Project defines a community platform that manages massive brain-imaging data sets in exchange for providing open access. The Open Connectome Project stores data in high-dimensional spatial databases on data-intensive clusters and provides Web services that link the data to high-performance computing. On this architecture, we run parallel computer vision algorithms that extract, store, and analyze brain structure. As a platform for Open Science, the Open Connectome Project democratizes access to world-class brain data, making it publicly available to an interdisciplinary community of researchers, including statisticians, physicists, and computer scientists. This talk will describe how data-intensive computing is transforming Open (Neuro)-Science. It will cover the hardware and software architecture of the services, including spatial queries, data representations and placement, and integration with parallel computing.

Biography: Randal Burns is an Associate Professor in the Department of Computer Science and the Institute for Data-Intensive Engineering and Science at the Johns Hopkins University. He is a co-founder, chief architect, and the lead developer of the Open Connectome Project. His research for the last decade has centered on high-performance computing for scientific applications, specifically spatial data organization, batch query processing, and parallel data architectures. He has only recently discovered that neuroscience has the coolest data; he is a first time NIH Principal Investigator as of 2012. He is also a member of the Defense Science Study Group (DSSG) Class of 2012-2013.

For more information contact the technical host Frank Alexander, fja@lanl.gov, 665-4518.

Hosted by the Information Science and Technology Institute (ISTI)

Los Alamos
NATIONAL LABORATORY
EST. 1943

ISTI
INFORMATION SCIENCE & TECHNOLOGY INSTITUTE