HiPC 2015 Workshops 3 & 4: 
DDDAS/Infosymbiotics

Introduction

Two back-to-back half day workshops on complementary but synergistic topics - DDDAS/Infosymbiotics Applications and DDDAS/Infosymbiotics Software and Infrastructure - have been organized for HiPC 2015 to be held on Day 1 of the conference. Workshop 3 to be held in the morning will cover InfoSymbiotics/Dynamic Data Driven Applications Systems (DDDAS) for Smarter Systems; Workshop 4 in the afternoon will focus on Architectural Support and Middleware for InfoSymbiotics/ DDDAS.

Authors have submitted abstracts and those selected will give brief presentations. Post conference, they will be invited to submit full papers to a special issue of the Cluster Computing journal. The program of presentations for each workshop is listed here.

This introduction includes the program for the two workshops and an abstract for the keynote speaker, Dr. Frederica Darema, who is the program manager for of DDDAS related research in the U.S. Air Force Office of Scientific Research (AFOSR). The topic for her opening remarks is: InfoSymbioticSystems/DDDAS -Large-Scale Dynamic Data and Large-Scale Big Computing for Smart Systems.

Description of Workshops

The Dynamic Data Driven Applications Systems (DDDAS/Infosymbiotics) paradigm provides a powerful methodology and platform for Big Data and Big Computing in the vast ecosystem of ubiquitous data acquisition and processing devices ranging from sensors to exascale systems. Managing and efficiently exploiting massive-scale instrumentation of distributed assets, heterogeneity of data sources, model-driven in-network processing of large volumes of heterogeneous and high velocity data, predictive analytics, and superior situational awareness and other smart systems, benefit from applying DDDAS-based feedback-driven dynamic adaptation in fundamental attributes such as real-timeliness, reliability, security and privacy.

The DDDAS/Infosymbiotics paradigm is ideal to address the needs of such systems as well as emerging IoT (Internet of Things) environments because it intrinsically provides a bi-directional symbiotic feedback loop dynamically integrating multi modal data and multi-level system modeling, for data analytics and multi-level system actuation, to adaptively and intelligently steer and manage an application system and exploit more effectively system instrumentation resources.

Workshop Organizers
Aniruddha Gokhale, Vanderbilt University
Salim Hariri, University of Arizona
Adrian Sandu, Virginia Tech
Vaidy Sunderam, Emory University