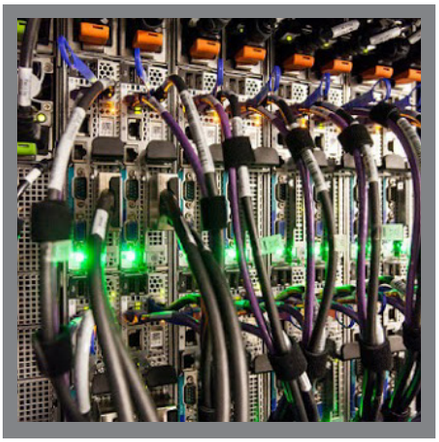

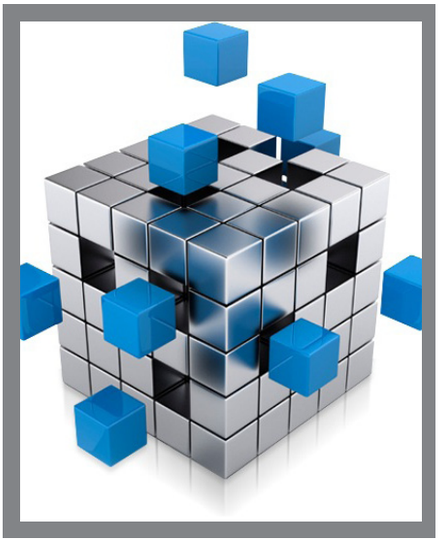

LSU-IBM Big Data Summit

February 26, 2014

Digital Media Center
LSU Campus

LOVE PURPLE
LIVE GOLD

IBM

LSU | Center for Computation & Technology

LSU Research: The Constant Pursuit of Discovery

LSU-IBM Big Data Summit

WEDNESDAY, FEBRUARY 26, 2014

DIGITAL MEDIA CENTER THEATRE
DIGITAL MEDIA CENTER, LSU CAMPUS

Big data is being generated by everything around us at all times. Every digital process and social media exchange produces it. Systems, sensors, and mobile devices transmit it. Big data is arriving from multiple sources at an alarming velocity, volume, and variety. Louisiana and LSU are in a unique position to contribute to big data research due to significant investments in high performance computing (HPC) systems implemented via the Louisiana Optical Network Initiative (LONI). Big data is poised to provide solutions across a spectrum of challenges, such as providing medical data integration, improving disease identification, addressing health disparities and personalized medicine, improving extraction of Earth-based energy resources, facilitating the smart energy grid, accelerating materials development, improving the prediction of hurricanes and coastal erosion, helping secure the water supply of large populations, and increasing the understanding of global food supplies.

The purpose of the LSU-IBM Big Data Summit is to discuss major research and developments at LSU and IBM that could result in future big data research collaborations. Areas of specific interest are: Medical Data and Bioinformatics, Environment and Coastal Issues, Materials and Manufacturing, Energy, and others.

SCHEDULE

Registration and Continental Breakfast **7:00 AM–8:00 AM**
Digital Media Center Theatre Lobby

Opening Remarks and Introductions **8:00 AM–8:15 AM**
Kalliat T. Valsaraj, Vice Chancellor, ORED, LSU
Gus Kousoulas, Associate Vice Chancellor, ORED, LSU

Official Welcome **8:15 AM–8:30 AM**
F. King Alexander, President and Chancellor, LSU
Stuart R. Bell, Executive Vice Chancellor and Provost, LSU

LSU IT Cyberinfrastructure/Strategy and Big Data Overview **8:30 AM–9:15 AM**
Honggao Liu, Deputy Director, CCT, LSU
Jay (Seung-Jong) Park, Associate Professor, Computer Science and CCT, LSU

Big Data–Enabled Health Outcomes Research **9:15 AM–10:00 AM**
John Estrada, Professor, Pediatrics, LSUHSC-NO
Ronald Horswell, Professor, Public Health, LSU-PBRC

Break **10:00 AM–10:15 AM**
Digital Media Center Theatre Lobby

Environmental & Coastal Sciences **10:15 AM–10:45 AM**

Q. Jim Chen, Professor, Civil and Environmental Engineering and CCT, LSU

Big Data Materials and Manufacturing **10:45 AM–11:30 AM**

Mark Jarrell, Professor, Physics and CCT, LSU

William Shelton, Professor, Chemical Engineering and CCT, LSU

Big Data on Physics and Astronomy **11:30 AM–12:00 PM**

Gabriela González, Professor, Physics and Astronomy, LSU

Lunch **12:00 PM–1:00 PM**

Digital Media Center Dining Room

IBM General Overview **1:00 PM–1:15 PM**

Ravi Arimilli, IBM Fellow, IBM Research, Austin

IBM Research & University Relationships **1:15 PM–2:15 PM**

Kevin Nowka, Director, IBM Research, Austin

Big Data Solutions for Human Genomics and Bioinformatics **2:15 PM–3:15 PM**

Frank Lee, Solution Architect, IBM Software Defined Systems

Break **3:15 PM–3:30 PM**

Digital Media Center Theatre Lobby

Big Data Technologies, Infrastructure, and Use Cases **3:30 PM–4:45 PM**

Fadi Gebara, Senior Manager, IBM Research, Austin

IBM Hardware Technologies for Big Data and HPC **4:45 PM–5:45 PM**

Ravi Arimilli, IBM Fellow, IBM Research, Austin

Closing Remarks **5:45 PM–6:00 PM**

Gus Kousoulas, Associate Vice Chancellor, ORED, LSU

IBM BIOGRAPHICAL SKETCHES

Ravi Arimilli works in IBM Research and is currently the chief architect for the analytics, big data, and cloud platforms. Due to the explosive technology inflections surrounding mobile, social, analytics, big data, cloud, and HPC, Mr. Arimilli and his team have been driving several disruptive, interdisciplinary technology plays in IBM Research. Mr. Arimilli has nearly 30 years' experience within IBM leading, innovating, and architecting microprocessors, systems, interconnects, and storage subsystems. Mr. Arimilli was the CTO for IBM's POWER Servers and the chief architect of the game-changing POWER4 and POWER5 family of servers. He became the second-youngest appointed IBM Fellow in 2000, was inducted into the LSU Hall of Distinction in 2008, and was the Chief Architect of three #1 Supercomputers. He led and won a $244 million DARPA bid to develop highly scalable and productive petascale supercomputers. Mr. Arimilli has nearly 500 patents and is well-known for his "downtown brainstorming sessions," which have led to paradigm shifts in the IT industry.

Fadi Gebara, PhD, is a senior manager at the IBM Austin Research Lab. He is responsible for Systems Research with an emphasis on workload optimization that delivers differentiated solutions in high-growth areas such as Big Data Analytics, Business Analytics, and Smarter Cities. Recently, his work has focused on strategy, management, and integration of coherent accelerators that use IBM's industry-leading middleware. Gebara received his PhD from the University of Michigan in 2004 and has authored over 20 papers and over 30 patents.

Frank Lee, PhD, is a senior certified solution architect and technical advisor for Life Sciences at IBM Corp. He has 13 years' of experience developing and deploying high performance computing (HPC), cloud, and analytics solution for the healthcare, life science, and education industries. He is responsible for innovative solutions such as BlueGene Express, PetaStore active archive, and VCL/HPC Cloud. Currently, he is one of the technical leads for the IBM genomic medicine initiative and creator of its reference architecture for genomics platform—PowerGene. While working with clients, Dr. Lee architected the end-end research infrastructure for the leading medical research centers in Qatar and the US. Dr. Lee started his research computing career through participation in the first genome sequencing project as a research associate and PhD candidate at Washington University Medical School and Genome Center. Trained as a molecular geneticist, he also conducted research with model organisms and discovered a novel cellular signaling pathway implicated in cancer gene regulation.

Kevin Nowka, PhD, is the director of IBM Research–Austin, one of IBM's 12 global research laboratories. He leads a team of scientists and engineers working on power-efficient systems and datacenters, system modeling, workload-optimized computing systems, high-speed and power-efficient VLSI circuits, productivity enhancing design automation tools, and the measurement and modeling of the complex interactions between the design and the manufacture of integrated circuits.

LSU BIOGRAPHICAL SKETCHES

Q. Jim Chen, PhD, a Professor of Civil and Environmental Engineering at LSU A&M. He also serves as the Water Resources and Coastal Engineering Group Coordinator. His research interests and expertise are: coastal engineering, numerical modeling, water wave mechanics, coastal hydrodynamics, near shore sediment transport, coastal hazard prediction and mitigation, and High Performance Computing.

John Estrada, MD, is an Associate Professor of Pediatrics and is Director of Education and Community Services of the LSU Cancer Center at LSUHSC-NO. He is Director of the NIH-funded Health Disparities Research Program that includes the Dillard-LSUHSC Minority Health and Health Disparities Research Center, the Community-Academic Partnership to Address Health Disparities in New Orleans, and the Mid-South Transdisciplinary Collaborative Center for Health Disparities Research, a tri-state collaboration. These programs support faculty development and research into the social and molecular bases of cancer disparities. He is also the Associate Director of the Clinical and Translational Research Center, an inpatient/outpatient facility that provides nursing and ancillary support for conducting clinical research and clinical trials.

Gabriela González, PhD, is a Professor of Physics and Astronomy at LSU A&M. Dr. González's research interests and expertise include detection of gravitational wave detectors funded by the National Science Foundation at the Laser Interferometer Gravitational Wave Observatory (LIGO) observatories in Hanford, WA, and Livingston, LA. She is the spokesperson of the LIGO Scientific Collaboration, a large international group of almost a thousand scientists working to develop the technology of LIGO detectors and analyze their data.

Ronald Horswell, PhD, is Associate Professor of Biomedical Informatics at the Pennington Biomedical Research Center and is an adjunct faculty member of the LSU School of Public Health. He received his PhD in business administration, concentrating in statistics and operations research. He also currently directs the LSU Health Care Services Division (LSU HCSD) Analysis Group, which furnishes analytic support and evaluation for disease management initiatives and population health programs. He was part of the team that initially developed the LSU HCSD DMED data warehouse. From 2004 to 2006, he was principal investigator and director of the LSU Health Services Research Program, funded by the Agency for Healthcare Research and Quality (AHRQ). Currently, he is a co-PI for the Patient Centered Outcomes Research Institute–funded Louisiana Clinical Data Research Network. Dr. Horswell's current research involves cost-effectiveness evaluation of clinical alternatives, methodologies to identify sources of variation in health outcomes, and the development of programs to more comprehensively evaluate the health status of patient populations.

Mark Jarrell, PhD, is a Professor of Physics in the Department of Physics at LSU A&M. Dr. Jarrell's main area of interest is the physics of strongly correlated electronic materials, which include many nanostructures, high T_c superconductors, and heavy Fermion and magnetic materials. He uses Quantum Monte Carlo (QMC) simulations to address experiments such as reflectivity, photoemission, inelastic neutron scattering, and transport.

Honggao Liu, PhD, is Deputy Director for the Center for Computation and Technology (CCT) at LSU A&M. Dr. Liu's research interests and expertise are in infrastructure and implementation of high performance computing (HPC). Liu has been instrumental in establishing CCT at LSU as a nationally recognized facility for providing production HPC cycles to researchers around the world. He has played a leadership role in the development efforts of the Louisiana Optical Network Initiative (LONI), a state-of-the art fiber optics network that connects Louisiana and Mississippi research universities to one another as well as to the national LambdaRail and Internet2.

Jay (Seung-Jong) Park, PhD, is an Associate Professor of Computer Science at LSU A&M. His research interests and expertise include: high-speed networks for High Performance Computing (HPC) and cyberinfrastructure for data intensive computing. He is currently working on the design of new transport layer protocols and topology control schemes for High Performance Computing Applications over high-speed networks, such as National LamdaRail and LONI, and developing frameworks for large-scale scientific applications (such as Computational Biology and Chemistry) using data intensive computing frameworks (such as Hadoop and Pregel) over cloud computing and HPC infrastructures.

William Shelton, PhD, is a Professor of Chemical Engineering at LSU A&M. Dr Shelton's research is in the areas of electronic structure and quantum transport, alloy theory, and surface science. In addition, Dr. Shelton has won several high performance computing awards including three Gordon Bell Prizes, a Computerworld Smithsonian Award, and three Supercomputing High Performance Computing Challenge Awards. Prior to arriving at LSU, Dr. Shelton was the Associate Director of the Environmental Molecular Sciences Laboratory located at Pacific Northwest National Laboratory where he lead the MyEMSL/EMSLHub data projects whose goal is to provide a system to capture, store, and share data and metadata from EMSL's instruments and computers and to support scientific collaboration around data-enabled science via EMSLHub.


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