Distinguished Lecture

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Genomes Galore: Big Data Challenges in the Life Sciences

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Georgia Institute of Technology

Friday, February 24, 2017
10:30 AM – 12:00 PM
Coverdell Hall, Room 175

Abstract: While the big data revolution in the consumer, business, and social networks domains is widely known, a similar revolution is taking place in the sciences and engineering driven by high-throughput instrumentation. This talk will feature big data challenges in the life sciences, primarily due to advances in sequencing that resulted in several orders of magnitude throughput increases per unit cost during the last decade. These advances are democratizing big data generation capabilities and spawning new scientific inquiries that would not be feasible otherwise. The time, cost, and complexity of data analysis have overtaken the cost and speed of data generation as the primary bottlenecks, posing significant challenges for computer scientists. I will present an overview of my group's research in addressing some of these issues through the development of parallel algorithms and high performance computing approaches. Apart from opening new avenues of investigation in parallel processing, research in this domain is also leading to broadly applicable techniques in areas such as graph analytics and parallel machine learning. I will also brief the audience on the ongoing federal initiatives in the United States aimed at nurturing multi-stakeholder partnerships to advance such big data challenges.

Biography:

Bio: Srinivas Aluru is a professor in the School of Computational Science and Engineering at Georgia Institute of Technology. He co-directs the Georgia Tech Interdisciplinary Research Institute in Data Engineering and Science (IDEaS), and co-leads the NSF South Big Data Regional Innovation Hub, which serves 16 Southern States in the U.S. and Washington D.C. Earlier, he held faculty positions at Iowa State University, Indian Institute of Technology Bombay, New Mexico State University, and Syracuse University. Aluru conducts research in high performance computing, bioinformatics and systems biology, combinatorial scientific computing, and applied algorithms. He is currently serving as the Chair of the ACM Special Interest Group on Bioinformatics, Computational Biology and Biomedical Informatics (SIGBIO). He is a recipient of the NSF Career award, IBM faculty award, Swarnajayanti Fellowship from the Government of India, and the Outstanding Senior Faculty Research award and the Dean's award for faculty excellence at Georgia Tech. He received the IEEE Computer Society Meritorious Service Award, and he is a Fellow of the AAAS and IEEE.