

Keynote Talk

Deep Computing in Biology: Challenges and Progress

Ajay Royyuru
IBM T.J. Watson Research Center
Yorktown Heights, New York USA
ajayr@us.ibm.com

Abstract

The Computational Biology Center at IBM Research pursues basic and exploratory research at the interface of information technology and biology. Information technology plays a vital role in enabling new science and discovery in biology. Advances in high throughput and platform technologies in biology present an unprecedented challenge in scale, management, and analysis of biological data. Advances in computing architecture and scale are enabling simulations of complex biological processes at various organizational levels from atomic to cellular and beyond. High performance computing that takes full advantage of massive parallelism is a necessary means to obtain the performance needed to tackle this complexity. This talk will provide an overview of our current research in computational biology and highlight recent advances in large scale simulations of biological systems.

Bio

Ajay Royyuru heads the Computational Biology Center at IBM Research, where he leads 35 researchers in projects that include bioinformatics, structural biology, protein science and applications on Blue Gene, functional genomics and systems biology. Ajay obtained his Ph.D. in molecular biology from the Tata Institute of Fundamental Research, Mumbai in 1993 and then did post-doctoral work in structural biology at Memorial Sloan-Kettering Cancer Center, New York. Prior to joining IBM in 1998, he spent two years developing structural biology software at Accelrys. His current research interests include understanding sequence-structure-function relationships in proteins and correlating genotype variations to phenotype outcomes. Ajay is the lead scientist from IBM on the Genographic Project.

Research page: <http://www.research.ibm.com/compsci/compbio>

Personal page: http://domino.research.ibm.com/comm/pr.nsf/pages/bio.royyuru_technical.html