



Key Facts About the Computation Institute



Mission

The Computation Institute is a groundbreaking, trans-disciplinary joint initiative of the University of Chicago and Argonne National Laboratory dedicated to pushing the frontiers of knowledge through the application of cutting-edge computational science.

The Computation Institute is both an intellectual nexus and resource center. It brings together researchers from different disciplines with common interests in advancing the state of the art in computing and its applications, and provides expert assistance to scholars whose work requires the most advanced computational methods.

Range of Research Activities

Computation Institute research is focused on technologies and applications of grid, high-performance computing (HPC), and cloud computing across the sciences, arts, and medicine. Examples include:

Computational Molecular Science: Computer simulations that model cellular proteins and chemicals to inform the development of smarter drugs, better materials and cleaner energy.

Big Data: Mining, visualizing, and sharing enormous datasets, including those newly emerging in biology, medicine, social sciences and humanities.

Imaging-Based Science: Innovative methods to analyze complex scientific and medical images that can improve research methods and disease diagnosis.

Text as Data: Computational text-mining techniques that automatically analyze millions of scientific journal articles to produce new hypotheses, disease models and insights.

Climate, Energy and Policy: Complex computational models to forecast an uncertain future and inform climate, energy and economic policy decisions.

Urban Sciences: Applying advanced computational and data-driven techniques to the challenge of intelligent urban planning and design.

User Resources

Computation Institute researchers have access to facilities that include storage resources, major parallel computing clusters, visualization systems, advanced display environments, collaborative environments, and high-capacity network links.

Argonne Leadership Computing Facility (ALCF):

Argonne's supercomputing center provides HPC resources and support services to enable its users to achieve maximum performance from their applications.

Theory and Computing Sciences Facility: An

interdisciplinary research center at Argonne that houses Argonne's expertise in HPC software, advanced hardware architectures, and applications.

Beagle: A 151 teraflop Cray XE6 system that supports computation, simulation, and data analysis for the biomedical research community, funded by National Institute of Health.

TeraPort: A Hadoop cluster dedicated to text processing and analysis research.

Corporate Affiliates Program

Partnership with the Computation Institute affords corporations the advantage of access to strategic academic research and talent at a unique institution that combines leadership in computational science with application. Our unique perspectives can help corporations attain the knowledge and talent needed to solve previously intractable problems and shrink time to discovery, development, and market.

Basic Facts

Director: Ian Foster

Deputy Director: Steve Tuecke

Number of Senior Fellows: 90

Number of Fellows: 46

Web site: www.ci.anl.gov



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