Call For Paper

Special Issue on
Computing Architectures and Acceleration for Bioinformatics Algorithms

Guest Editors: Feng Lin, Heiko Schröder, Bertil Schmidt

Description

The goal of this special issue is to present the current research and critical review on computing architectures, hardware-accelerated algorithms, and software systems for bioinformatics data processing tasks. During the last decades, research in the fields of molecular biology and biomedicine has provided the scientific community with huge amount of data through sequencing, genome-wide annotation, gene expression profiling and proteomics projects. The genetic databases have been growing exponentially and sophisticated computer algorithms have been developed to cater for needs of data mining, analysis and simulation. It is clear that development of high performance computing technologies has become crucial for deployment of the software systems to tackle various bioinformatics problems.

Papers published in this issue will address the compute-intensive bioinformatics algorithms and system development, and the applications ranging from fundamental computational biology to biomedical applications. Along with the data processing in genomics and proteomics, we are especially interested in the following computational solutions:

- DNA sequence alignment and assembly
- Heuristic sequence database searching
- Identification of structural and genetic features on a genome
- Genetic function mapping
- RNA secondary structure modelling
- SAGE and microarray data mining
- Clustering algorithms and gene profiling
- Protein folding and structural modelling
- Protein-ligand docking and inter-protein interaction
- Comparative genomics and molecular phylogeny
- Machine learning algorithms such as neural network, HMM and SVM for bioinformatics

Authors should emphasize exploratory work on the use of modern computing architectures, and different metric change rates such as compute versus communicate, and latency versus bandwidth. Computing architectures of interest include reconfigurable architectures such as Field-Programmable Gate Arrays, systolic architectures, multi-core architectures and chip-level multiprocessing, SIMD and MIMD architectures, cluster and compute farm, grid computing, multi-thread and stream computing architectures, and multimedia architectures.

Original research, significant improvement of previous methods and in-depth survey on the above topics are invited to the special issue. And as a general guideline to submission to The Journal of VLSI Signal Processing Systems, papers can be categorized into

- Architectural design and analysis
- Computation methodology
- System performance analysis (including measurement, modeling, and simulation)
- Review and prospect analysis

Online Manuscript Submission

Manuscripts for this special issue should be submitted online at the following URL:

http://www.editorialmanager.com/vlsi

The instructions for the authors can be found there. Especially, when you are prompted to Select Article Type, choose "Special Issue – CompuArch & Bioinfo". All the papers will be reviewed by the Guest Editors and invited reviewers, and recommended to the Editorial Board for publication.

Important Dates

Call for paper: 1 October 2006
Deadline for submission of full paper: 1 December 2006
Completion of review/notification of acceptance: 1 January 2007
Revised paper due: 1 February 2007
Notification of final decision: 15 February 2007
Publication of electronic version: February 2007
Publication of printed version: June 2007

Emails to the Guest Editors

Dr Feng Lin: asflin@ntu.edu.sg
Dr Heiko Schröder: heiko@cs.rmit.edu.au
Dr Bertil Schmidt: asbschmidt@ntu.edu.sg

Publications Abstracted/Indexed in:

ACM Guide To Computing Literature, Compendex, CompuMath Citation Index, Computer and Information Systems Abstracts, Current Contents/Engineering, Computing and Technology, Electronics and Communications Abstracts, Inspec, ISI Alerting Services, Science Citation Index Expanded, SCOPUS, Solid State and Superconductivity Abstracts, Zentralblatt Math