Course Announcement for Spring 2006

Current Topics in Computer Science: Computational Genomics

CSCI 7000-005
MW 10:30-11:45
ECOT 831

Computers are revolutionizing biology, and biology is presenting complex new algorithmic challenges for computer scientists. The enormous volume of error-prone data generated by genomics projects and other new high-throughput experimental methods requires efficient computational techniques. Interdisciplinary fields such as computational biology are growing in their importance to computer scientists, and will continue to provide cutting-edge research problems.

Professor: Debra Goldberg

Prerequisite: CSCI 5454 “Design and Analysis of Algorithms”

Course Description:
This course will overview algorithms used to decipher genomic data, including the organization and function of chromosomes, genes and proteins. No biological knowledge will be assumed. Topics covered will include:

- biology of genes and proteins for computer scientists
- mapping and sequencing DNA
- computing similarity between DNA and protein sequences
- identifying genes and regulatory regions in a DNA sequence
- genome rearrangements between species
- predicting protein functions

Additional topics will be selected according to students’ interests.

Students will be evaluated based on homework assignments, presentation of a paper from the literature, and class participation. A group or individual project of original work may be completed and presented in lieu of presenting a paper.

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