CS 4984: "Computational Biology and Bioinformatics"

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Dr. Liqing Zhang

This course serves as an introduction to the fields of computational biology and bioinformatics. The primary emphasis is on the basic computational methods used for problems arising in genomics. The course is intended for junior or senior computer science majors who want to become familiar with biological questions and with solving these questions using computational algorithms and tools. No biological background is assumed. The course will cover basic genetics and problems in the current genomic era. This is an exciting time for students with a computer science background who are interested in this rapidly growing field and in the interplay between computer science and biology. Computer science is proving to be extremely useful to biology and vice versa. In many cases, computer scientists are changing the way biologists think about problems or access and utilize information. At the same time, biological questions are generating important new applications and research areas for computer science.

The class focuses on an introduction to bioinformatics algorithms. Topics include computational approaches to pattern searching, sequence homology and alignment, and phylogeny. Students will also gain experience with popular bioinformatics software. The basic concepts of genetics will be covered and a wide variety of important problems in the current frontier of bioinformatics will be discussed.

Approximately 50% of the grade will be determined by projects. The remainder of the grade will be based on homework assignments and a final exam.

Prerequisite: CS 2604 or 2606 with a C or better.