ICS 691 - Special Topics Computer Science

Artificial Intelligence in Biomedical Informatics
Spring 2011

Instructor: Prof. Nancy Reed, nreed@hawaii.edu

Details: CRN: 88617, Course number: ICS 691, Section 002, Credits: 3 Time: Mon and Wed, 10:30-11:45, Location: 242 Holmes Hall.

Course Description: This course gives students an overview of Artificial Intelligence (AI) techniques used in medicine and biology. Practical applications of AI in bioinformatics range from decision support systems for diagnosis to modeling physiologic processes, to analyzing human and animal DNA. Students in the course gain an in-depth practical experience by designing and completing a course project on a topic they choose.

Textbook: Book TBD. Selected papers from journals (e.g. Artificial Intelligence in Medicine, the journal of the American Medical Informatics Association) and conferences/workshops (e.g. AIMA).

Prerequisites: Programming experience in one or more programming languages. Experience in artificial intelligence and/or biomedicine is useful, but not required.

Course Objectives: A student should understand (i) the fundamental concepts needed to apply AI in biomedical informatics, including knowledge representation and reasoning methods, (ii) the principles of designing solutions to solve problems, gain an in-depth understanding of concepts working with an existing system, and (iii) design new systems. A student should be able to decide if a non-trivial problem can be solved effectively using existing techniques, and if so, design and implement a prototype system to solve the problem.

Term Project: The term project can be a literature review or a programming project. The programming project includes the development (or modification), testing, and evaluation of one or more software or hardware agent systems in an application area of your choice. All projects require a written proposal, progress report including references, a presentation in class, and a final report.

Grading: Grades are based on the presentation of research papers in class and participation in class discussions (20%) and completion of a term project, including a final written report and a final presentation (80%).