Pattern Recognition in Bioinformatics

Level of course
Master course

Program
Computer Science and IT

Quarter
Q3 in 2012

Hours per week
Lectures (2+1h/week)

Name of lecturer(s)
Christian Nørgaard Storm Pedersen and Thomas Mailund

Compulsory program
Two programming projects

Objectives of the course
The participants will after the course have insight into algorithms for pattern recognition in biological sequences (DNA, RNA, and protein) and practical experience with implementation of these algorithms. The working method of the course will also train the participants to plan and complete projects and to communicate professional issues.

Prerequisites
Introduktion til Programmering og Algoritmer og Datastrukturer 1, eller tilsvarende

Learning outcomes and competences
The participants must at the end of the course be able to:
- define and describe basic problems in pattern recognition in biological sequences.
- apply and explain known techniques for design of algorithm for pattern recognition in biological sequences.
- implement and evaluate concrete algorithms based on known techniques for pattern recognition in biological sequences.

Contents

Bioinformatics is about developing and applying algorithms for analysis of biological data. The amount of sequence data is growing fast, and many interesting problems are based on the analysis of large sets of sequence data. This class covers concrete algorithms for pattern recognition and discovery in sequence data based on hidden Markov models (HMMs) and stochastic context-free grammars (SCFGs), and examples of their application on biological sequences.

Literature

Selected research papers and book chapters

Course homepage

http://www.cs.au.dk/~cstorm/courses/PRiB

Type of course/teaching methods

Lectures and exercises

Assessment methods

Oral exam, 20 minutes without preparation
7-scale, internal examiner

Credits

5 ECTS

Language

English

Provider

Department of Computer Science

Course enrolment

http://mit.au.dk
Special comments on this course

Schedule for this course

cstorm@cs.au.dk