Projects in Bioinformatics @ BiRC

A project in bioinformatics is an individual 5 or 10 ECTS project carried out under supervision of a BiRC researcher.

The contract: To initiate the project, the supervisor and student must fill out this contract and send a signed copy (in pdf-format) to Christian Storm Pedersen <cstorm@birc.au.dk> before **September 15**, if the project is done in the Fall semester, and **February 15**, if the project is done in the Spring semester. Note that you must agree on a **hand in date** and an **exam date** in the exam period immediately following the project work.

The project itself: When a signed contract has been submitted, and approved, it is the responsibility of the student, under supervision, to do the described project, and hand in the report (10-15 pages, if a 5 ECTS project, and 20-25 pages, if a 10 ECTS project) to the supervisor no later than the agreed hand in date.

Exam: The exam itself is a 15 min presentation of the project, followed by a 15 min discussion of the presentation and the report. Besides the supervisor, an internal co-examiner (another BiRC researcher) must be present at the exam. The final grade is based on an overall assessment of the written report, the presentation, and the following the discussion, where the assessment of written report contributes the most.

Supervisor responsibility: It is the responsibility of the supervisor to conduct the exam no later than the agreed exam date and plan with the internal co-examiner. Before the exam, the supervisor must get the exam protocol by contacting Arne Jensen <ajensen@au.dk>. After the exam, the supervisor must send the signed protocol to Arne Jensen (with cc to Christian Storm Pedersen).

See http://birc.au.dk/studies/pib/ for more information.

Student ID:	201803148
Student name:	Andrej Baláž
Supervisor name:	Søren Besenbacher
Project title:	Classification of cancer samples using Neural Networks
Start date:	28.01.2019
Hand in date:	21.06.2019
Exam date:	26.06.2019

ECTS:

❑ 5 ECTS

✓ 10 ECTS

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Signature student   Signature supervisor

Project description:
The objective of the project is to predict cancer type from RNA-seq data using neural networks. TCGA RNA-seq data will be divided into training and test data and GTEX RNA-seq data will be used to select a subset of informative genes prior to training. Classification will be performed using feedforward neural network(s) implemented in python (using pytorch). Experiments will test the effect of the GTEX feature-selection and compare classification based on network architectures.

Learning goals:
- The student should be able to describe what a feedforward neural network is.
- The student should be able to implement a feedforward neural network in python that can perform classification based on gene expression data
- The student should be able to discuss the experiments performed using the implemented neural networks