Computing Across the Disciplines (CAD); a new Center/Department at the University of Oslo

Morten Hjorth-Jensen

Department of Physics, University of Oslo, Oslo, Norway and Michigan State University, USA

Excerpts From the initiative in January 2018 which lead to the dScience center

Goals in 2018

- Position UiO as a leader in computational science by recruiting faculty whose expertise pertains to large-scale computing and mathematical foundations of data science - both generalists (algorithm/tool developers) and specialists (focused on specific disciplines).
- Develop a comprehensive set of courses and degree programs at both undergraduate and graduate levels that will give students across the university exposure to practical computational methods, understanding how to analyse data and more generally to the idea of computers as problem-solving tools. These courses will also include Software Carpentry and Data Carpentry. The courses and degree programs can also be tailored to external users.
- **Develop an all university PhD program in Computational Science and Data Science**
- **Develop an all university Master of Science Program in Computational Science and Data Science**
- **Develop an all university Bachelor of Science Program in Computational Science and Data Science**
- **Develop courses and course modules in Computational Science and Data Science for the private and the public sectors**
- Develop a PhD program in Computational Science and Data Science tailored to the needs of the private and the public sectors

- Facilitate the adoption of computational tools and techniques for both research and education across campus, through education and faculty collaboration. A center and then a department will facilitate the pursuit of these goals!
- Educate the next generation of school teachers and university teachers, with a strong focus on digital competences.

2021

dScience will not be responsible for educational initiatives nor be the administrative unit. We need however a better coordination. This leads to the following:

- Need to coordinate better courses in data analysis and machine learning and other courses in CS and DS.
- Coordination CS and DS master of science programs, one program start fall 2023.
- Establish a new bachelor program in CS and DS (see points below) across disciplines with start fall 2023.
- Develop a PhD program in CS and DS across disciplines
- Establish certificates in CS and DS

One coordinating unit: Dept of Math.

CS and DS Master of Science

- Keep study directions in CS and DS as of now (perhaps reorganize some) but merge into one program Computational Science and Data Science.

Several reasons for this:

- few students understand the difference
- possibility for better coordination of courses
- many students in the CS program take several data analysis and ML courses
- Easy to accomodate new initiatives
- more arguments...

CS and DS Bachelor

A bachelor degree for several disciplines.

- single out 80-100 ECTS in math and statistics, data science and machine learning
- leave reamining 80-100 ECTS for specializations etc, in physics, geo science, life science, chemistry, math, stat, sociology, economy, plotical science, and more.
- here we can have statistics courses for various disciplines, like **Data Science and Statistics for the Physical Sciences**

Start fall 2023.