Application for funding of faculty common course 2020
Ansökan om medel för fakultetsgemensam forskarutbildningskurs 2020

English course title
Kursnamn på engelska
Digital Image Analysis for Scientific Applications

Swedish course title
Kursnamn på svenska
Tillämpningsorienterad datoriserad bildanalys

Extent (credits)
Omfattning (högskolepoäng)
8 hp for the whole course, 5 hp for part 1 of the course

Language of instruction
Undervisningsspråk
English

Recommended prerequisites
Rekommenderade förkunskaper
The target group is PhD students from all subjects where digital image analysis (IA) is used as a research tool. No previous experience in IA is required from the course participants, but an interest in its potential as a tool in their own research is important. The course can be followed with a basic knowledge of mathematics (corresponding to upper-secondary level entry requirements) and basic computer skills.
In the second part of the course, we plan to have a set of lectures focused on IA usage in the research domains in which we have extensive experience and for which we expect many students: microscopy, radiology, materials science and medical engineering. To match all students’ interests, we will use our IA network and tailor lectures/literature suggestions to fit specific research areas where IA is used. By using this flexible structure, we will attract students from all sections within the TekNat Faculty, including life science, medical engineering, and materials science.

General course objective/s and learning outcomes (Also specify which PhD examination goals that are addressed/covered. Describe how.)
Kursens syfte och mål (Beskriv vilka mål för examen på forskarnivå som beaktas och på vilket sätt.)
The course participants will study literature relevant to their PhD project, practice their ability to scientific analyses, find and test appropriate IA methods, and present and discuss their scientific results.

Course contents
Kursinnehåll
The focus of the course is on reaching a broad understanding of IA and a basic understanding of the theory and algorithms behind the IA methods. The course starts with basic IA methods and computer exercises, including IA research methodology and IA research ethics. In the second part of the course, participants choose at least four lectures/computer exercises to tailor the course to match their own research interest (see the Figure below).
Instruction (course structure)
Undervisning (kursens uppläggning)

Figure: Course structure. The first part gives 5 ECTS credits, and the whole course, part I and II, gives 8 ECTS credits. The lectures in the second part will be adjusted to match the students' research interest. We will invite guest lecturers when needed.

Assessment (form of examination)
Examination (examinationsformer)
The examination will be divided into
- four computer exercises, both to get familiar with the interfaces of common software and to solve realistic image processing problems,
- a written exam on part 1,
- a project (oral presentation and written report), where the course participants apply the collected knowledge to a project within their own domain.

Course examiner (name, e-mail)
Examinator (namn, e-post)
Ingela Nyström, ingela.nystrom@it.uu.se

Department with main responsibility
Huvudansvarig institution
Dept. of Information Technology, Division of Visual Information and Interaction

Contact person/s (course responsible teacher) (name, e-mail)
Kontaktperson/er (kursansvarig lärare) (namn, e-post)
Ingela Nyström, ingela.nystrom@it.uu.se
Course dates/period
Kurs datum/period
October-December 2020

Maximum number of participants
Antal platser
40

Submit the application for admission to
Skicka anmälan till kursen till
Ingela Nyström, ingela.nystrom@it.uu.se

Submit the application not later than
Skicka anmälan senast
September 1, 2020