NTNU
Norwegian University of Science and Technology

Jobbnorge-ID: 148547
Søknadsfrist: Avsluttet
Nettside:
Omfang:
Varighet:

PhD fellowship/Postdoctoral fellowship in "Data driven modelling of moving flexible structures"

A new PhD fellowship/Postdoctoral fellowship in computational science is available at the Department of Mathematical Sciences at NTNU. The successful candidate will be offered a three-year position as a PhD fellow or a two-year position as a postdoctoral fellow. The Department may offer a six to twelve month extension with teaching duties. The workplace will be Trondheim.

About the research project and the job description

Objectives: The aim of this project is to incorporate available data information in physical models of moving flexible structures. There are numerous potential applications for this research, one of which could be explored more in detail during the project. Examples are animation of character motion, activity recognition, modelling of slender structures e.g. cables and hoses, and problems of biomechanics like bio-locomotion. This approach can be potentially used: 1) to validate the existing physical models with available data; 2) to explore new models that are completely data driven; 3) to design models that are partly data driven and partly based on the solution of equations derived from physical laws.

Methodology: We will use techniques based on differential geometry and in particular shape analysis on Lie groups and homogeneous manifolds. The deformation/motion of the flexible structure can be seen as the geodesic curve in an infinite dimensional manifold. The features of this deformation can be determined by solving optimal control problems or alternatively, using machine learning and deep neural networks.

Expected results: We expect to obtain improved models for the targeted applications. These models will be discretised and implemented in a code. The designed models will be analysed and their properties elucidated.

Qualifications

We seek candidates with a good mathematical background at master/PhD level or equivalent.

Ability to work in teams and to collaborate with other scientists with a different background are very important, as well as strong motivation for working on the project.

The successful candidate must have a strong background in numerical mathematics and/or scientific computing and familiarity with differential equations. Good programming skills are essential. Basic knowledge of differential geometry is desirable. A background in geometric numerical integration, geometric mechanics and/or shape analysis is an advantage.

The applicants who do not master a Scandinavian language must document a thorough knowledge of English (equivalent to a TOEFL score of 600 or more).

The PhD applicants must have a master's degree in mathematics or a corresponding education. They must satisfy the requirement for entering the PhD programme at NTNU; please see http://www.ntnu.edu/ime/research/phd The admission to PhD education at NTNU requires an average grade of A or B within a scale of A-E for passing grades (A best) for the last two years of the MSc, and C or higher for the BSc. MSc students who expect to complete their master's degree studies by summer 2018 are encouraged to apply. Employment will then be postponed until the master's degree is finished.

The postdoctoral applicants must have a PhD degree in computational mathematics or a corresponding education. They must hold a PhD degree or have submitted their thesis at the time of the application.

The application

The application must include the following:

- A short research statement explaining the experience and interest of the candidate for the research topic, and describing the relevance of the candidate's background to the research project (maximum 1 page).
- CV including a full list of publications with bibliographical references.
- The most important publications that are relevant for the evaluation of the applicant's qualifications (maximum 10 publications), mostly relevant for postdoc applicants.
- Certified copies of relevant transcripts and diplomas. Candidates from universities outside Norway are kindly requested to send a Diploma Supplement or similar documentation, which describes in detail the programme of study, the grading system, and the rights to further studies associated with the degree obtained.
- Documentation of fluency in the English language.

Other documents which the applicant would find relevant may also be included, such as information about teaching experience, testimonials and certificates.

Incomplete applications will not be considered.

Applications are to be submitted electronically through this page. Preferably, the attachments should be submitted as a single file.

Please state if you are applying for the PhD or postdoctoral fellowship.

Terms of employment

The position adheres to the Norwegian Government's policy of balanced ethnicity, age and gender. NTNU wishes to increase the number of women in its workforce, and female candidates are therefore encouraged to apply.

The appointment will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees. Applicants to the PhD fellowship must agree to participate in organized doctoral study programs within the period of the appointment and have to be qualified for the PhD-study.

The PhD fellowship is placed in salary code 1017, with a gross salary of NOK 436 500 per year before tax. A pension contribution of 2% of the salary will be deducted as an obligatory premium to the Norwegian Public Service Pension Fund.

The position as postdoctoral fellow follows code 1352, and is remunerated at level 57 on the Norwegian government salary scale, with a gross salary of NOK 490 500 a year. A pension contribution of 2% of the salary will be deducted as an obligatory premium to the Norwegian Public Service Pension Fund.

The PhD/Postdoc fellow will be part of the Department of Mathematical Sciences at NTNU and will have her/his workplace there, and will join the group of geometric numerical integration and structure preserving algorithms. See http://www.ntnu.no/imf.

Under Section 25 of the Freedom of Information Act, information about the applicant may be made public even if the applicant has requested not to have his or her name entered on the list of applicants.

For further information, please contact:

Elena Celledoni (elena.celledoni@ntnu.no).

Reference no: IE 024-2018

Closing date: 26.03.2018.

Tilleggsinformasjon

Arbeidssted: