Professor in System Dynamics for Development of 'Digital Twins'

About the position

We have a vacancy for a Professor in System Dynamics for Development of Digital Twins, at the Department of ICT and Natural Sciences (IIR) in Ålesund. This is a newly established industrial sponsored position in collaboration with Equinor.

We are looking for a candidate with a talent and a passion for teaching, research, and innovation. The candidate is expected to have extensive research experience within mathematical model development and simulation of dynamic systems and application of virtual and augmented reality for dynamic systems and geometric modelling. The research should be reflected in an extensive publication list and high impact.

Since 2006, the department has been involved in developing some of the world's most advanced simulators and today has a modern visual theatre for simulation and visualization.

Research at the Department of ICT and Natural Sciences NTNU is in close collaboration with local industries in the Møre and Romsdal area including the public health sector the world's leading maritime industrial cluster of north western Norway.

This position is strongly connected to the strategic research areas announced at the Norwegian University of Science and Technology (NTNU), see https://www.ntnu.edu/research/strategicareas.

The position reports to the head of department.

Main duties and responsibilities

The professor is expected to contribute to the creation of an environment in which cutting-edge research results can be combined seamlessly with progressive technologies and operational expertise of industry partners. Building digital representations (digital twins - DTs) of dynamic systems and operate these DTs using both mathematical models and historical and real-time data will support prediction and optimization procedures, fostering the review and exploration of potential next steps for working. The goal is to support the design, development, and implementation of efficient and sustainable digital representations of systems of interest to our industrial collaborators. Examples are robotic system, marine crafts, health care, smart cities etc.

The professor is expected to cooperate with other academic disciplines at NTNU, such as visual computing, AI, machine learning, cybernetics, addressing generic applications in simulation and visualization.

The professor is expected to perform teaching and supervision activities in the Master of Simulation and visualization. The professor will contribute to the long-term R&D on next generation adaptive visual simulators of dynamic systems. At the same time, the professor is expected to provide vital competence in ongoing and future research applications in strategic areas of the department.

MSc and PhD candidates from the study programmes of the faculty are expected to be competitive in an international job market. The professor is expected to play a leading role in developing the educational profile in digital twins whilst ensuring an excellent learning environment, in collaboration with colleagues, students, and external stakeholders. The faculty's study programmes should have a strong international profile, and the professor is expected to be able to contribute to the development of international alliances and collaboration. The professor is expected to teach relevant courses at all levels and should supervise MSc and PhD students. Continued education is included in the portfolio of educational activities.

The research activities of the department rely crucially on external funding, and the development of educational programmes may also receive external funding. The professor is expected to work actively to receive research grants and other external income from the Research Council of Norway, Nordic and European research and educational agencies, relevant industry and public sector, and other available sources.

In addition to research and education, the professor is expected to be able to disseminate relevant parts of her/his research to a wider audience. The professor is also expected to participate in the formal management of research, education, and other relevant areas of activity in agreement with the department head.

Qualification requirements

The position of Professor requires university education at doctoral level in Computer Science, cybernetics or related areas and demonstrable academic excellence in the relevant areas of dynamic systems.

The applicant's research must be documented and of high, international quality, showing both breadth and depth. Research activity and output must demonstrate an independent research profile and the ability to take up new research issues. Continuous research activity is a prerequisite for professorial positions. Strong emphasis will be placed on publication of research results in recognized international journals within the subject areas. The greatest emphasis is placed on academic work undertaken during the past five years, excluding statutory leave.

Emphasis will be placed on ability and experience in initiating and leading research and development of the Digital Twins area, and in obtaining external funding for research.

In addition to formal qualifications in teaching at university level, the candidate must document

- Development in teaching and counselling of students over time
- Extensive experience with supervision preferably at the master / PhD level
- Participation in the development of educational quality in a work environment

Specific qualification requirements include:

- Solid skills in mathematical modelling and simulation of dynamic systems
- Solid skills in 3D visualization, virtual, and augmented reality
- Demonstrated teaching in the area of simulation, system dynamics, mathematical modelling, data visualization and/or augmented reality
- A track record of successful external research funding for the establishment of an internationally competitive research group
- Strong publication profile within simulation, visualization, and/or augmented reality areas in selective publication venues
- Establishment of a strong external network of collaboration (demonstrated through, for example, joint publications, participation in research organization, organization of international conferences and workshops

Other requirements

The successful applicant will be expected to deliver high-quality teaching at undergraduate and postgraduate levels, and undertake supervision of Masters and Doctoral candidates. Evaluation of these skills will be based on documented experience and relevant teaching qualifications. Applicants with teaching experience at university level are preferred. Quality and breadth of the teaching qualifications will be evaluated.

Those who do not have formal qualifications in teaching at university level and who cannot provide documentation of equivalent qualifications must complete an approved pedagogical development programme within two years of appointment.

It is a prerequisite that within three years of appointment, new employees who do not speak a Scandinavian language can demonstrate skills in Norwegian or another Scandinavian language equivalent to level three in the course for Norwegian for speakers of other languages at the Department of Language and Literature at NTNU.

Please see the Regulations concerning appointment and promotion to teaching and research posts for general criteria for the position. NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

Personal characteristics

- Independence; have great work capacity and enthusiasm for teaching and research. It is emphasized that the applicant is expected to have the ability to contribute to a good academic and research working environment.
- Ability to articulate a consistent research agenda to attract funding to support such research.
- Motivation to work closely, in a multidisciplinary environment, with the industry and contribute to business innovation within simulation and visualization.
- Highly developed interpersonal and communication skills.

In the assessment of the best qualified applicant, education, experience and personal suitability will be emphasized, as well as motivation for the position.

We offer

- exciting and stimulating tasks in a strong international academic environment
- an open and inclusive work environment with dedicated colleagues
- favourable terms in the Norwegian Public Service Pension Fund
- employee benefits

Salary and conditions

The gross salary for the position of Professor code 1013 is normally from NOK 627 700 - 1 243 000 before tax per year, depending on qualifications and seniority. From the salary, 2 % is deducted as a contribution to the Norwegian Public Service Pension Fund.

The engagement is to be made in accordance with the regulations in force concerning State Employees and Civil Servants, and the acts relating to Control of the Export of Strategic Goods, Services and Technology. Candidates who by assessment of the application and attachment are seen to conflict with the criterias in the latter law will be prohibited from recruitment to NTNU. After the appointment you must assume that there may be changes in the area of work.

The person appointed must live in a location enabling him/her to be present at and available to the institution.

About the application

The application and supporting documentation to be used as the basis for the assessment must be in English.

The application must include:

- CV including information pertaining to the given qualifications and a full list of publications with bibliographical references, certificates and diplomas
- Academic works - published or unpublished - that you would like to be considered in the assessment (up to 10 works)
- A description of the academic/artistic works that you regard as most relevant and that you particularly want to be taken into account in the assessment
- Name and address of three referees
- Research plan
- Details of teaching qualifications based on "Documentation of applicant's teaching qualifications in connection with appointment to an academic position at NTNU"
- Details of the projects you have managed, with information about funding, duration and size

Joint works will be considered. If it is difficult to identify your contribution to joint works, you must attach a brief description of your participation.

When the application deadline has passed, a shortlisting committee will evaluate all applications. The best qualified applicants will then be considered by an external appointments panel and the most suitable applicants will be invited to interview and to deliver a lecture to undergraduate students.

General information

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background. NTNU wishes to increase the proportion of women in its academic positions, and women are therefore encouraged to apply.

Under the Freedom of Information Act (offentleglova), information about the applicant may be made public even if the applicant has requested not to have their name entered on the list of applicants.

Questions about the position can be directed to the Head of Department Anniken Karlsen phone: +47 70 16 13 35/ +47 907 41 704 e-mail: anniken.t.karlsen@ntnu.no.

Submit your application with your CV, diplomas and certificates via jobbnorge.no. Applicants invited for interview must bring certified copies of certificates and diplomas. Mark the application with reference number: 2019/35922.

Deadline for applications: 08.03.2020

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The Norwegian University of Science and Technology (NTNU) creates knowledge for a better world and solutions that can change everyday life.

Department of ICT and Natural Sciences

Our campus in Ålesund works in a partnership with industry that is in a class of its own among Norwegian universities. This ensures a practical focus for our study programmes, while they are firmly anchored in modern theory. The Department offers programmes in computer science, electrical engineering, simulation and visualization and preparatory course for engineering. For information about our research areas, please visit our website. The Department of ICT and Natural Sciences is one of seven departments in the Faculty of Information Technology and Electrical Engineering .

Jobbnorge-ID: 174936, Søknadsfrist: 8. mars 2020