Jobbnorge ID: 238048
Deadline: 2/25/2023
Website: http://www.uia.no
Scope: Fulltime
Duration: Temporary

Postdoctoral Research Fellow in Robotics - Control and Machine Learning

About the position

A fixed-term 100% position is available at the University of Agder, Faculty of Engineering and Sciences, as a Postdoctoral Research Fellow in the fields of robotics, control and machine learning, for a period of 2 years. The position is located at the Grimstad Campus and will be affiliated among the Department of Engineering Sciences and the Department of Information and Communication Technologies. The starting date is negotiable with the Faculty.

The position is within the Norwegian Research Council Long-term Research Project "Collective Efficient Deep Learning and Networked Control for Multiple Collaborative Robot Systems (DEEPCOBOT)". The overall goal of the DEEPCOBOT project is the design of a new generation of learning-based control strategies for multiple collaborative robots (robot manipulators and mobile robots), which can interact both between themselves and with human operators in order to collectively learn from each other's experiences and perform cooperatively different complex tasks in a dynamic industrial process environment. The project is motivated by the increasing demand of automation in industry, especially the demand of a safer, more intuitive, more comfortable, and more efficient collaboration between multiple robots and human operators to integrate the best of human abilities (creativity, adaptivity, interaction) and robotic automation (speed, reliability, precision, and inexhaustible task execution capability), while being robust across different environments and human operators. This project will lead to several important advances in the areas of robotics, control, machine learning, robotic vision, graph signal processing, design of cross-layer network protocols for distributed computation and collective intelligence across multiple cobots.

The project will be integrated in two Priority Research Centers at UiA, Center of Mechatronics and WISENET Center, where the Postdoctoral Research Fellow will benefit intellectually from the interaction with internationally recognized researchers, well-equipped environments and will build on and strengthen the established cooperation in machine learning, robotics, control, and autonomous networked cyber-physical systems with industry partners, such as ABB Norway, Omron Electronics Norway, Mechatronics Innovation Lab, and international partners including University of California San Diego (USA), KTH Royal Institute of Technology (Sweden) and the University of Navarra (Spain). The project will also give the opportunity to pay extended visits to universities in EU and USA.

The facilities in the team include a vision-instrumented lab for experiments with 2 robot manipulators (6-dof industrial manipulators), 4 mobile robots, and 1 service mobile manipulator robot. In addition, the team members have the access to Mechatronics Innovation Lab.

Responsibilities

The position will cover theoretical advancements, algorithm design, as well as simulation and experimental evaluation, on one of the following research topics:

- Developing learning control strategies (safe reinforcement learning, reinforcement-learning-model predictive control (RL-MPC), adaptive dynamic programming (ADP), adaptive control) for robust and efficient robot tasks in the context of robot control, motion planning, robot manipulation, or multi-robot collaboration
- Developing deep reinforcement learning algorithms for robots to infer and predict the motion of neighbor robots or human operators interacting with them, including also interpretable, active and transfer learning methods to speed up the learning process and the corresponding shared control strategies guiding the interaction between the robots and human operators
- Developing graph signal processing algorithms, graph neural networks and cross-layer network protocols to provide the required diffusion of information across the multi robots satisfying the real-time and safety constraints and minimizing energy consumption.

The successful candidate will work with the following task:

- Contribute to the relevant objectives and deliverables of the project
- Mentoring of the PhD candidates and Master students in the project
- Driving publication of project results in high-impact journals and peer-reviewed conferences.

Required qualifications

To be regarded as an eligible applicant, the candidates must have:

- Ph.D. degree in either Robotics, Mechatronics, Control Engineering, Mechanical Engineering, ICT, Computer Science, or other related discipline. It is desirable that the applicant has defended her/his doctoral thesis within the last five years. PhD students are also welcomed to apply if their thesis has been submitted before the deadline.
- Excellent written and spoken English language skills.
- Background and experience within the following areas:

    - Robotics
    - Control
    - Deep learning and reinforcement learning.
- Strong track record of publications in robotics, control, or reinforcement learning.
- In addition, the candidate is expected to have good programming skills or experience in Python, Matlab, C/C++, Robot Operating System (ROS), or relevant tools (e.g. Tensorflow, Keras, PyTorch, github).

The candidate is expected to work in a highly collaborative multi-disciplinary environment with other post-doctoral associates, PhDs, and undergraduate students, as well as faculty members. The project will give the opportunity to pay extended visits to other universities.

Further provisions relating to the positions as PhD Research Fellows can be found in the Regulations Concerning Terms and Conditions of Employment for the post of Post-Doctoral Research Fellow, Research Assistant and Resident.

Personal qualities

- Scientific ambition, curious to learn and explore.
- Quick learner, motivated and strong interest in cutting-edge research.
- Good analytical, problem-solving, and experimental skills.
- Strong academic credentials.
- Capacity for goal-oriented work and ability to concentrate.
- Good communication and team-working skills, inventiveness, and a proactive attitude.
- Capacity also to perform independent research.

We offer

- World-class research facilities and the opportunity to work in a world-class research organisation with an excellent research environment. You will collaborate with top scientists in your field and have excellent prospects for personal development in an innovative working environment for aspiring researchers.
- Positive, inclusive, and diverse work environment
- Modern facilities and a comprehensive set of welfare offers
- Professional development in a large, exciting, and socially influential organisation
- Membership of the Norwegian Public Service Pension Fund

A postdoctoral research position should function as an intermediate step in the research career following the completion of a PhD degree and preceding a faculty position in a university. For this reason, our Centers are committed to offering the suitable environment and activities that allow the postdoctoral researcher to: (i) consolidate her/his research maturity, (ii) develop her/his teaching and supervision skills by working and co-advising PhD students, and (iii) build up a solid resume that facilitates her/his incorporation to the academia as an assistant or associate professor.

More about working at UiA.

Information about why UiA provides an excellent working environment can be found here too

The position is remunerated according to the State Salary Scale, salary plan 17.510, code 1352 Post-Doctoral Research Fellow, NOK 570 000 - 585 000 gross salary per year. A compulsory pension contribution to the Norwegian Public Service Pension Fund is deducted from the pay according to current statutory provisions.

General information

UiA is an open and inclusive university. We believe that diversity enriches the workplace and makes us better. We, therefore, encourage qualified candidates to apply for the position independent of gender, age, cultural background, disability or an incomplete CV.

Women are strongly encouraged to apply for the position.

The successful applicant will have rights and obligations in accordance with the current regulations for the position, and organisational changes and changes in the duties and responsibilities of the position must be expected. The engagement is to be made in accordance with the regulations in force concerning the acts relating to Control of the Export of Strategic Goods, Services and Technology. Appointment is made by the University of Agder's Appointments Committee for Teaching and Research Positions.

Short-listed applicants will be invited for interview. With the applicant's permission, UiA will also conduct a reference check before appointment. More about the employment process.

In accordance with the Freedom of Information Act § 25 (2), applicants may request that they are not identified in the open list of applicants. The University, however, reserves the right to publish the names of applicants. Applicants will be advised of the University's intention to exercise this right.

Application

The application and any other necessary information about education and experience (including diplomas and certificates) are to be sent electronically only. Use the link "**Apply for this job**".

The following documentation shall be submitted as attachments to the online application:

- CV with a complete list of scientific publications, indicating the main five scientific publications which the candidate wishes to particularly emphasise for the assessment process.
- Certificates and transcripts with grades (Bachelor, Master and PhD).
- A copy of the PhD thesis or link. If you are close to submitting, or have recently submitted your thesis, you can attach a draft of the thesis. Documentation of a completed doctoral degree must be presented before taking up the position.

- A cover letter (maximum 2 pages) including your motivation for a postdoctoral fellow and justification of the background for the requirements of the position.
- Research plan (maximum 2 pages) identifying your understanding and thoughts of topics pf the postdoctoral position.
- Names and contact information of two referees.
- Any other relevant documentation.

The applicant is fully responsible for submitting complete digital documentation before the closing date. All documentation must be available in a Scandinavian language or English.

Application deadline: 25.02.23

Contact

For questions about the position:

- Professor Jing Zhou, tel. +47 37 23 31 91, e-mail jing.zhou@uia.no
- Professor Baltasar Beferull Lozano, tel. +47 37 23 31 59, e-mail baltasar.beferull@uia.no
- Head of Department of Engineering and Sciences, Paul Ragnar Svennevig, tel. +47 37 23 32 54, e-mail paul.r.svennevig@uia.no

For questions about the application process:

- HR advisor Linda Marie Anderstrøm, tel. (+47) 37 23 37 03, e-mail: linda.m.anderstrom@uia.no

University of Agder

The University of Agder has more than 1500 employees and almost 14 000 students. This makes us one of the largest workplaces in Southern Norway. Our staff research, teach and disseminate knowledge from a variety of academic fields. Co-creation of knowledge is our common vision. We offer a broad range of study programmes in many fields. We are situated at two modern campuses in Kristiansand and Grimstad respectively.

We are an open and inclusive university marked by a culture of cooperation. The aim of the university is to further develop education and research at a high international level.

Additional information

Place of service:

Jon Lilletunsvei 9 4879 Grimstad (Grimstad Municipality)