Jobbnorge ID: 238442
Deadline: 2/28/2023
Website: http://www.ntnu.no
Scope: Fulltime
Duration: Temporary

The Department of Chemical Engineering has a vacancy for a

Post Doc position for developing Computer Vision methods for real-time detection and classification

This is NTNU

NTNU is a broad-based university with a technical-scientific profile and a focus in professional education. The university is located in three cities with headquarters in Trondheim.

At NTNU, 9,000 employees and 42,000 students work to create knowledge for a better world.

You can find more information about working at NTNU and the application process here.

Video: https://youtu.be/Xt-yHCN5QS0

About the position

The postdoctoral fellowship position is a temporary position where the main goal is to qualify for work in senior academic positions.

Ugelstad Laboratory (https://www.ntnu.edu/chemeng/research/ugelstad) at Department of Chemical Engineering (https://www.ntnu.edu/chemeng) has a vacant Post.Doc. position within development of Computer Vision methods for real-time detection and classification of microfluidic generated droplets, bubbles and solids.

Ugelstad Laboratory covers a range of fundamental and applied research within surface, colloid and polymer chemistry. The group is active within topics such as characterisation of complex fluids and interfaces, surfactants and biopolymers, particle synthesis, gas flotation and multiphase flow in porous media. In recent years microfluidic platforms have been used to prepare and characterise dispersed systems, and image-based analyses have provided information about coalescence in emulsions (https://doi.org/10.1016/j.colsurfa.2019.124265), drop-bubble attachments (10.1021/acs.energyfuels.8b02236), transport of emulsions in porous media (https://doi.org/10.1016/j.ces.2021.117152) and synthesis of nanoparticles (https://doi.org/10.1021/acsaem.9b00952).

In parallel, deep neural networks have been shown to be even more effective at feature extraction than widely used tools within Matlab/Python libraries and ImageJ for the detection and classification of droplets (https://doi.org/10.1016/j.mlwa.2021.100222).

The Project

We are now looking for a Post.doc. fellow that can continue to develop the synergies between machine-/deep learning methods and high-throughput imaging on microfluidic platforms. The goal is to develop real-time computer vision tools for detection, classification and tracking of drops, bubbles and solids.

The candidate will work in close collaboration with other researchers in the group that will carry out experimental microfluidic work related to i) controlling interfacial properties to optimise drop/bubble stability/separation, ii) controlling synthetic conditions to optimise nanoparticle properties, and iii) following transport and retention of drops and particles flowing in porous media. Hence, we primarily want a post.doc candidate with strong programming skills and good understanding of experimental work that can collaborate with one or more of these researchers and utilise their data for the development of analytical tools.

You will report to Professor Gisle Øye.

The latest startup of the project should be 01.08.2023 due to collaboration with other research projects in the group.

Duties of the position

- Develop real-time computer vision tools for detection, classification and characterization of drops, bubbles and solids.
- Present project results at project meetings, workshops, and conferences.
- Train MSc and PhD students to use the developed tools.
- Assist MSc and PhD students with developing optical tools for characterizing transport and deformation of suspended droplets and solids.
- Prepare user-friendly manuals for the developed tools.

- Prepare scientific papers.
- Contribute to preparation of grant proposals.

Required selection criteria

- PhD within computer vision methods or related topics
- Strong programming skills with working knowledge and documented experience with Python/Matlab
- Good written and oral English language skills
- You must meet the requirements for admission to the faculty's doctoral program Chemical Engineering (https://www.ntnu.edu/chemeng)

The appointment is to be made in accordance with Regulations on terms of employment for positions such as postdoctoral fellow, Ph.D Candidate, research assistant and specialist candidate.

Preferred selection criteria

- Experience in PyTorch/TensorFlow.
- Good knowledge of chemical engineering, surface and colloid chemistry or microfluidic methods (including device design).
- Experience with developing theoretical models for rationalization.
- Experience with scientific writing.
- Good written and oral Norwegian language skills.

Personal characteristics

- Self-motivated, pro-active and goal oriented.
- Good communication skills with both experimentalists and theorists.
- Good collaborative skills with both experimentalists and theorists.
- Organized and patient with problem-solving mindset.

Emphasis will be placed on personal and interpersonal qualities.

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

As a Postdoctoral Fellow (code 1352) you are normally paid from gross NOK 553 500 per annum before tax, depending on qualifications and seniority. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund

The period of employment is 32 months.

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 criteria 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.

It is a prerequisite you can be present at and accessible to the institution on a daily basis.

About the application

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

Publications and other scientific work must follow the application. Please note that applications are only evaluated based on the information available on the application deadline. You should ensure that your application shows clearly how your skills and experience meet the criteria which are set out above.

If, for any reason, you have taken a career break or have had an atypical career and wish to disclose this in your application, the selection committee will take this into account, recognizing that the quantity of your research may be reduced as a result.

The application must include:

- CV, certificates and diplomas.
- Transcripts and diplomas for bachelor's-, master's- and PhD degrees.
- Links to your past projects in the GitHub repositories.
- Name and contact information for three referees.

If all, or parts, of your education has been taken abroad, we also ask you to attach documentation of the scope and quality of your entire education. Description of the documentation required can be found here. If you already have a statement from NOKUT, please attach this as well.

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.

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal and interpersonal qualities. Motivation, ambitions, and potential will also count in the assessment of the candidates.

NTNU is committed to following evaluation criteria for research quality according to The San Francisco Declaration on Research Assessment - DORA.

General information

Working at NTNU

A good work environment is characterized by diversity. We encourage qualified candidates to apply, regardless of their gender, functional capacity or cultural background.

The city of Trondheim is a modern European city with a rich cultural scene. Trondheim is the innovation capital of Norway with a population of 200,000. The Norwegian welfare state, including healthcare, schools, kindergartens and overall equality, is probably the best of its kind in the world. Professional subsidized day-care for children is easily available. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life and has low crime rates and clean air quality.

As an employee at NTNU, you must at all times adhere to the changes that the development in the subject entails and the organizational changes that are adopted.

A public list of applicants with name, age, job title and municipality of residence is prepared after the application deadline. If you want to reserve yourself from entry on the public applicant list, this must be justified. Assessment will be made in accordance with current legislation. You will be notified if the reservation is not accepted.

If you have any questions about the position, please contact Profesor Gisle Øye, email gisle.oye@ntnu.no. If you have any questions about the recruitment process, please contact Andrea Sommervold, e-mail: andrea.s.sommervold@ntnu.no

Please submit your application electronically via jobbnorge.no with your CV, diplomas and certificates. Applications submitted elsewhere will not be considered. Diploma Supplement is required to attach for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of Master Diploma from China Credentials Verification (CHSI).

Please refer to the application number 238442 when applying.

Application deadline: 28.02.2023

NTNU

NTNU - knowledge for a better world

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

Department og Chemical Engineering

We take chemistry from laboratory scale to industrial production. This demands a wide range of knowledge, from molecular processes and nanotechnology to building and operation of large processing plants. We educate graduates for some of Norway's most important industries. The Department of Chemical Engineering is one of eight departments in the Faculty of Natural Sciences.

Additional information

Place of service:

NTNU, Gløshaugen 7491 Trondheim (Trondheim Municipality)