UiT The Arctic University of Norway
Department of Physics and Technology

Jobbnorge ID: 214947
Deadline: 2/7/2022
Website: https://uit.no/startsida
Scope: Fulltime
Duration: Fixed Term

Faculty of Science and Technology

PhD Fellow in 3D label-free microscopy

The position

The Department of Physics and Technology is pleased to announce a vacant position of a PhD Fellow in the optics group in connection with the EU FET-Open project 'OrganVision: Technology for real-time visualizing and modelling of fundamental process in living organoids towards new insights into organ-specific health, disease, and recovery'. Details about the project are also available at the project website organvision.eu

The position is for a period of four years. The nominal length of the PhD programme is three years. The fourth year is distributed as 25 % each year and will consist of teaching and other duties. The objective of the position is to complete research training to the level of a doctoral degree. Admission to the PhD programme is a prerequisite for employment, and the programme period starts on commencement of the position.

The workplace is at UiT in Tromsø. You must be able to start in the position in Tromsø within a reasonable time after receiving the offer.

The project

The PhD Fellow will be a part of 3d-nanoscopy team, led by Assoc. Prof. Krishna Agarwal, who works on super-resolution microscopy, also referred to as nanoscopy. Please see 3dnanoscopy.com for more information. She is also the coordinator and the lead principal investigator of the aforementioned project. The goal of the project is to develop a new label-free microscope comprising of a novel innovative instrument and a novel innovative computational solver, which together provide real-time 3D microscopy images of thick biological samples such as tissues and organoids without using chemical stains. The fellow will work towards his/her PhD degree with the following goals:

- development and optimization of the computation solver based on 'Transport of Intensity' or 'Radiative transfer equation'
- optimization of the computation solvers based on non-linear inverse electromagnetic scattering and 3D fluorescence microscopy solver for lattice illumination patterns
- porting and integrating the computation solvers with the hardware of the new microscopy instrument and installing the solvers across different participant teams across Europe
- collaborate extensively with the instrument development team at University of Barcelona, and actively with the biotechnology team at IFOM (Italy), life science team at UNN, and artificial intelligence team at UiT
- participate in algorithm prototyping, code and data maintenance, communication, and dissemination,
- dissemination of the work through scientific journal publications and conference participation

This project lies at the intersection of applied physics, applied mathematics, engineering, and biology. It requires a highly motivated, enthusiastic, goal-oriented, and diversely talented candidate. In turn, it provides an opportunity for doing a very interesting cutting-edge and heavily multi-disciplinary research in early stage of research career.

The nature of the project and the job scope is that it allows an all rounded development of the fellow. The fellow will be encouraged and supported to build his/her resume towards their ambition in academic, technopreneurial, or main stream industrial career. There is an opportunity for the fellow to build his/her research network through inheriting the collaborations of the group.

The project team is composed of an international consortium or prestigious partners across academia, research, and industry. They include UiT, University hospital of North Norway (UNN, Norway), University of Barcelona, Federal Institute of Molecular Oncology (IFOM, Italy), University Hospital of Hamburg (UKE, Germany), 3rd Place (Milan, Italy), and Jenlab (Berlin, Italy). This provides a unique opportunity to the student for exposure to international, multidisciplinary, multi-cultural, and diversity in professional roles experience. Several travels and multicultural exchanges are planned, situations permitting. Other relevant collaborators network is also present, including USoton (UK), NTNU (Norway), UiO (Norway), IIT (Italy), University of Campagnia (Italy), EMBL (Germany), NUS (Singapore), ASTAR (Singapore), BIT (China), Sun Yat Sen University (China), and IIT (India).

The fellow will also be encouraged to become a member (membership paid by UiT) of the Optical Society of America and Digital Life Norway (DLN). DLN is a national platform for multi-disciplinary research with life sciences as a focus. DLN offers several PhD courses and career development programs, which the fellow can participate in. The fellow will also have an opportunity to become a member of the northern-most OSA student chapter, and currently the only one in Norway.

Affiliation

UiT the Arctic University of Norway with its main campus located in the quaint little city of Tromsø is the northernmost university in the world. It houses the optics group in the Department of Physics and Technology, Faculty of Science and Technology, at the main campus of UiT.

The optics group has experienced a great surge in research, thanks to a constant flow of Horizon2020 funding through ERC and MSCA-IF projects and funding from the Research Council of Norway (RCN) through diverse projects. This has lead to a thriving multi-national (currently representing 8 nations) and multi-disciplinary research group, currently comprising of 4 principal investigators, 7 post docs, 7 PhD candidates, several master students and a multi-million dollar research infrastructure. There is a constant flow of international visiting experts.

The group members represent various disciplines like optics, photonics, fabrication, biology, mathematics, sensing, microscopy, nanoscopy, chemistry, computer engineering, electronic instrumentation, etc. The group's core research activity targets development of cutting-edge technologies in nano-photonics, optics-based climate sensing, microscopy, and optical and computational nanoscopy. There is an emphasis on gender equality, cultural integration, conducive work environment excellence through cooperation and co-enabling, and support of growth and ambition of everyone in the group.

We offer an interesting PhD position funded by UiT for a project under the prestigious FET-Open Grant of EU, scientific independence, good remuneration, great potential of growth, and fantastic work environment within the stunning landscape of Tromsø.

Contact

For further information about the position, please contact Assoc. Prof. Krishna Agarwal:

- phone: +47 776 45157
- email: krishna.agarwal@uit.no

Qualifications

The position requires a Norwegian master degree or equivalent in physics, mathematics, or electrical or computer engineering.

In addition, the **main qualifications** and **mandatory requirements** include:

- Excellent programming skills in Matlab, Python, Java or another scientific programming platforms
- Postgraduate coursework or master thesis strongly related to at least 4 of the following topics:
    - Functional analysis or Operator theory
    - Linear algebra,
    - Integral and Differential Calculus
    - Optimization theory
    - Radiative transfer or Transport of intensity
    - Electromagnetic wave theory
    - Computational modeling of electromagnetic or optical phenomena
    - Optics or Microscopy or Nanoscopy
    - Inverse Problems

It is **expected** that the candidate demonstrates:

- Good written and verbal communication skills in English.
- Self-motivation, independence, enthusiasm
- Excellent work ethic and commitment to the job

It is **desirable** that the candidate demonstrates some of the following:

- Creativity, ability to think outside the box, problem solving and go-getter characteristics are extremely desirable
- Publication record (academic or non-academic scientific), if any, including journal articles, patents, conference articles, software or source code releases, news articles, video or text blogs are welcome (order of examples indicates roughly the order of preference).
- Prior experience in synchronization of electronic equipment and customized automation of processes
- International experience and cultural awareness

The assessment will emphasize motivation and personal suitability for the position. The candidate must be willing to engage in the ongoing development of label-free nanoscopy and the university as a whole.

As many as possible should have the opportunity to undertake organized research training. If you already hold a PhD or have equivalent competence, we will not appoint you to this position.

Admission to the PhD programme

For employment in the PhD position, you must be qualified for admission to the PhD programme at the Faculty of Science and Technology and participate in organized doctoral studies within the employment period.

Admission normally requires:

- A bachelor's degree of 180 ECTS and a master's degree of 120 ECTS, or an integrated master's degree of 300 ECTS.
- A master's thesis with a scope corresponding to at least 30 ECTS for a master's degree of 120 ECTS.
- A master's thesis with a scope corresponding to at least 20 ECTS for an integrated master's degree of 300 ECTS.

In order to gain admission to the programme, the applicant must have a grade point average of C or better for the master's degree and for relevant subjects of the bachelor's degree. A more detailed description of admission requirements can be found here.

Applicants with a foreign education will be subjected to an evaluation of whether the educational background is equal to Norwegian higher education, following national guidelines from NOKUT.

If you are employed in the position, you will be provisionally admitted to the PhD programme. Application for final admission must be submitted no later than two months after taking up the position.

Inclusion and diversity

UiT The Arctic University of Norway is working actively to promote equality, gender balance and diversity among employees and students, and to create an inclusive and safe working environment. We believe that inclusion and diversity are a strength and we want employees with different competencies, professional experience, life experience and perspectives.

If you have a disability, a gap in your CV or immigrant background, we encourage you to tick the box for this in your application. If there are qualified applicants, we invite at least one in each group for an interview. If you get the job, we will adapt the working conditions if you need it. Apart from selecting the right candidates, we will only use the information for anonymous statistics.

We offer

- Exciting research possibilities, international exposure, opportunity to shape and pursue career ambition, opportunity to build extensive research network, and great potential of growth
- Exposure of working in highly prestigious EU funded project and cutting edge research
- Fantastic work environment and good renumeration within the stunning landscape of Tromsø
- Good welfare arrangements for employees
- Good arrangements for pension, insurance and loans in the Norwegian Public Service Pension Fund
- More practical information for working and living in Norway can be found here: https://uit.no/staffmobility

Application

Your application must include:

- Application letter describing
  - why the candidate considers oneself suitable for the position
  - what motivates the candidate to apply for the position and what the candidate expects from this position
- CV, including list of publications, if any
- Diploma for bachelor's and master's degree
- Transcript of grades/academic record for bachelor's and master's degree
- Explanation of the grading system for foreign education (Diploma Supplement if available)
- Documentation of English proficiency
- List of at least 2 academic references
- Master’s thesis, and any other academic works

Qualification with a master’s degree is required before commencement in the position. If you are near completion of your master’s degree, you may still apply and submit a draft version of the thesis and a statement from your supervisor or institution indicating when the degree will be obtained. You must still submit your transcripts for the master’s degree with your application.

All documentation to be considered must be in a Scandinavian language or English. Diplomas and transcripts must also be submitted in the original language, if not in English or Scandinavian. We only accept applications and documentation sent via Jobbnorge within the application deadline.

General information

The appointment is made in accordance with State regulations and guidelines at UiT. At our website, you will find more information for applicants.

A shorter period of appointment may be decided when the PhD Fellow has already completed parts of their research training programme or when the appointment is based on a previous qualifying position PhD Fellow, research assistant, or the like in such a way that the total time used for research training amounts to three years.

Remuneration for the position of PhD Fellow is in accordance with the State salary scale code 1017. A compulsory contribution of 2 % to the Norwegian Public Service Pension Fund will be deducted.

We process personal data given in an application or CV in accordance with the Personal Data Act (Offentleglova). According to the Personal Data Act information about the applicant may be included in the public applicant list, also in cases where the applicant has requested non-disclosure. You will receive advance notification in the event of such publication, if you have requested non-disclosure.

UiT - Developing the High North

UiT is a multi-campus research university in Norway and the northernmost university of the world. Our central location in the High North, our broad and diverse research and study portfolio, and our interdisciplinary qualities make us uniquely suited to meet the challenges of the future. At UiT you can explore global issues from a close-up perspective.

Credibility, academic freedom, closeness, creativity and commitment shall be hallmarks of the relationship between our employees, between our employees and our students and between UiT and our partners.

Additional information

Place of service:
UiT in Tromsø 9019 Tromsø (Tromsø - Romsa Municipality)