



The University of Bergen (UiB) is an internationally recognised research university with more than 14,000 students and close to 3,500 employees at six faculties. The university is located in the heart of Bergen. Our main contribution to society is excellent basic research and education across a wide range of disciplines.

## PhD-position in medical imaging and machine learning (4 years)

At the Faculty of Medicine, Department of Biomedicine, a PhD-position (100 %) in computational imaging and machine learning is available for a period of four (4) years or max 4 months after completed the PhD-degree, if this is achieved within a shorter time than four years. The positions include 25 % required duties such as teaching, exam work or supervision, depending on the demands at the department.

The position is part of the project "Computational medical imaging and machine learning - methods, infrastructure and applications", at the newly established Mohn Medical Imaging and Visualization Center (MMIV), Department of Radiology, Haukeland University Hospital (<https://mmiv.no>), and is funded by the University of Bergen.

### Project and tasks

The goal of the project is to develop, implement, disseminate and evaluate machine learning techniques in the analysis of medical images and image-related data.

To successfully incorporate machine learning in medicine, doctors and medical specialists have to take a leading role. Our project, initiated from the Department of Biomedicine at UiB and the Department of Computing, Mathematics and Physics at HVL, is therefore tightly connected with departments at the hospital where data is collected and decisions are made. Our research is done in close collaboration with world-class clinical researchers, ensuring the research results's relevance and increasing its potential impact. The project involves many researchers in Bergen, both clinical and methodological, in addition to national and international collaborators from world-class research institutions.

The project aims to contribute to increased degree of personalized medicine and better decision support for diagnosis, prognosis and therapy in diseases and conditions where images are an important source of information.

The PhD candidate will work on both method development and applications.

- The work will be done in a highly interdisciplinary research group consisting of biomedical researchers, mathematicians, statisticians and computer scientists, in close collaboration with clinicians
- MMIV has access to state-of-the-art imaging infrastructure, e.g. the most recent models from Siemens and General Electric (GE 3TMR 750 Discovery, Siemens Prisma 3T, Siemens Skyra 3T, Siemens Biograph mMR PET/MR (from Sept 2018), Siemens Vision PET/CT)
- The PhD candidate will also have access to MMIV's computational infrastructure, consisting of powerful desktop computers equipped with various NVIDIA GPUs (e.g. GeForce 1080Ti, Titan V). The hospital is in the process of establishing a novel high performance computing infrastructure which will be available to MMIV for data analysis and machine learning
- The PhD candidate will play an active role in introducing next-generation technology (e.g. deep learning) for medical image processing and analysis.

The PhD candidate will work on methods for preclinical and clinical imaging, including image segmentation, image-based modelling, and incorporation of clinical data and data from other sources (e.g. -omics data), in hypothesis-driven and data-driven analyses using machine learning methods and modern software frameworks.

Some specific applications that can be investigated by the PhD candidate (depending on the candidate's background and interests) include:

- Brain-gut-axis: identification and quantification of structural and functional brain connectivity signatures and gastrointestinal motility patterns in IBS patients using advanced neuro and abdominal imaging.
- Functional kidney imaging: Kidney segmentation from MRI, estimation of glomerular filtration rate (GFR) using pharmacokinetic modelling
- Imaging-based biomarkers for prediction of outcome variables in prostate or gynecological cancer (radiomics)
- Neurological diseases like tumor, stroke, MS and neurodegeneration, assessed using multimodal structural and functional brain imaging (e.g. sMRI, dMRI, fMRI, pMRI and DCE-MRI), and e.g. brain network analysis, morphometry and model-based approaches in a machine learning setting
- During the PhD project we encourage a research stay of at least three months at one of our international collaborators from USA (Mayo Clinic), Switzerland (ETH), Germany (Zuse Institute), France (ISIMA), Luxembourg (LIH), Poland (TUL), or another research institution that fits well with the project.

For further information please contact Professor Arvid Lundervold, e-mail: [arvid.lundervold@uib.no](mailto:arvid.lundervold@uib.no), phone: +47 91561824.

### Qualifications and qualities

- The successful applicant must hold a master's degree, or equivalent degree, in medical/biomedical sciences or natural sciences on topics related to image analysis, statistics, machine learning, computational medicine, bioinformatics or similar
- Very good programming skills is a requirement. You are encouraged to include a link to your GitHub profile or similar documentation of programming competence in your application
- Candidates with experience in both machine learning and medical image analysis are particularly welcome to apply for this position
- Personal skills, including abilities to work independently and cooperate within a research group will be evaluated
- The applicant must be motivated and responsible, and also have a great work capacity and enthusiasm for research
- The successful applicant must be fluent in oral and written English

Applicant whose education is from another country than Norway, need to also attach a certified translation of the diploma and transcript of grades to English or a Scandinavian language. If the original is not in any of these languages, it is required that the applicant enclose a review from NOKUT whether the education in question is of a scope and level that corresponds to the level of a Norwegian master's degree. Please see [www.nokut.no/en](http://www.nokut.no/en) for more information about NOKUT's general recognition. The review from NOKUT may take some time and the application should be sent to NOKUT as soon as you have decided to apply for the position. If no answer within the application deadline, please enclose documentation from NOKUT that they have received your application.

Language qualifications: <http://www.uib.no/en/med/115526/english-language-requirements-phd-admission>

### Organized research training (PhD program)

The main goal for the PhD positions are to complete the PhD-program. The applicant must take part in the University of Bergen approved PhD programme leading to the degree within a fixed time limit. You must have admission to the organized research training (PhD program) at the Faculty in order to qualify for the position.

Application for admission to the PhD programme, including a project plan outline for the training plan must be submitted no later than three months after the date of commencement.

### The PhD-position

PhD-positions are fixed term positions. You cannot be employed in a PhD- position for more than one fixed term period at the same institution, or had similar employment at an institution in the region.

The teaching is usually performed in Norwegian.

### We can offer:

- A good and challenging work environment in the research front of computational medical imaging and machine learning with access to highly interesting data sets and important research questions
- Salary in accordance with level 50 (code 1017/pay framework 20.8) on the government salary scale. For applicants with at least one year of employment in a position as a General Practitioner or Dentist level 52. Further increases in salary will be based on seniority in the position. For applicants with specialist education level 58 (code 1017/Pay framework 20.15).
- A good pension scheme in the Norwegian Public Service Pension Fund
- A position in an inclusive workplace (IA enterprise)
- Good welfare benefits

For more information regarding what the University of Bergen can offer its employees please visit: <http://www.uib.no/en/poa/74243/what-can-university-bergen-offer-its-employees>

### Recruitment to state employment

State employment shall reflect the multiplicity of the population at large to the highest possible degree. The University of Bergen has therefore adopted a personnel policy objective to ensure that we achieve a balanced composition regarding age and sex and the recruitment of persons of various ethnic backgrounds and persons with disabilities. Persons of different ethnic backgrounds and persons with disabilities are therefore encouraged to apply for the position.

The successful applicant must comply with the guidelines that apply to the position at any time.

The University of Bergen applies the principles of public openness when recruiting staff to scientific positions. Information about the applicant may be made public even though the applicant has requested not to be named in the list of applicants. The applicant will be notified if his/her request is not respected.

### How to apply

The application must contain:

- A brief letter of application stating your motivation for the position, why you are applying and why the position is perfect for you
- Certified copies of diplomas and transcripts of grades. Applicant whose education is from another country than Norway, need to also attach a certified translation of the diploma and transcript of grades to English or a Scandinavian language, if the original is not in any of these languages. It is required that the applicant enclose a review from NOKUT whether the education in question is of a scope and

level that corresponds to the level of a Norwegian master's degree. Please see [www.nokut.no/en](http://www.nokut.no/en) for more information about NOKUT's general recognition. The review from NOKUT may take some time and we recommend you to apply as soon as you know you will apply for the PhD position. If no answer within the application deadline, please enclose documentation from NOKUT that they have received your application. Documentation of language skills in English (TOEFL, Cambridge or IELTS)

- Complete list of publications and scientific work you want to be evaluated
- Two referees (name and contact information)

Please send your application with attachments electronically via Jobbnorge by clicking on the button marked "Apply for this job".

The applications will be sent electronically to the assessment committee. Please notice that the applications will be assessed only with the information available in Jobbnorge when the deadline expires.

Further information about our employment process can be found [here](#).

Jobbnorge ID: 152432, Deadline: Closed