



# PhD position “Facilitating Policy Analysis using Agent-based Modelling”

## About the position

The Department of Computer Science (IDI) (<https://www.ntnu.no/idi>), under the Faculty of Information Technology and Electrical Engineering (IE) at the Norwegian University of Science and Technology (NTNU) has a vacancy for a PhD candidate position at the Department of Computer Science, Gjøvik, Norway.

The advertised PhD fellowship focuses on the evaluation of policy changes (e.g., laws, regulations) using agent-based simulation and machine learning techniques. For this fellowship, we will employ principles of institutional analysis to develop computational tools and techniques for the development of agent-based models from policy specifications.

The successful PhD student will analytically investigate existing policies, participate in the development of encoded policy datasets, conceptualize and implement technical solutions to automate the generation of corresponding simulation models. As an outcome of this fellowship, the student will contribute to the methodological discussion of policy analysis, gain expertise in the development of analytical toolsets, and be proficient in developing agent-based models to analyze policy change in social-scientific domains (e.g., public policy, socio-ecological systems, political economy).

The position reports to Head of Department

## Main duties and responsibilities

- Analysis of specified policy scenarios and datasets, e.g., using agent-based models in conjunction with other methods
- Development of agent-based modelling framework components
- Development of necessary auxiliary software components (e.g., for facilitating data analysis)
- Participate in dissemination activities (authoring reports, papers and articles; presenting at conferences/symposia, etc.)
- Support the preparation and delivery of taught courses (if seeking a 4-year position; see Salary and Conditions for details)

## Qualification requirements

### PhD candidate:

The PhD-position's main objective is to qualify for work in research positions. The qualification requirement is completion of a master's degree or second degree (equivalent to 120 credits) with a strong academic background in Computer Science/Informatics/Computational Social Science or equivalent education with a grade of B or better in terms of [NTNU's grading scale](#). Applicants with no letter grades from previous studies must have an equally good academic foundation. Applicants who are unable to meet these criteria may be considered only if they can document that they are particularly suitable candidates for education leading to a PhD degree. Note: This position will not support applicants who already hold a doctoral degree/PhD.

The candidate should be proficient in software development, a) including (but not limited to) experience with the use of general-purpose programming languages (such as C++ and Java), and b) the development of software frameworks. Ideally, the candidate has experience with statistical toolkits such as R. Knowledge of scripting languages is of additional value for the position, but not sufficient in its own right.

In addition, experience in one or more of the following domains is desirable: agent-based modelling (and platforms), natural language processing, applied machine learning, large-scale data processing and analysis. It is expected that the successful applicant develops proficiency in further areas relevant to this duties associated with this position.

Beyond the technical abilities, a focal aspect in the evaluation process is the candidate's aptitude for the research theme, ability to think analytically and systematic problem solving, along with the fit into the project and research environment.

Desirable personal qualities include the ability to work independently as well as in team settings, a high level of initiative, personal responsibility and communication skills. The successful candidate should be creative, with a strong ability to work problem-oriented. Candidate should also enjoy interdisciplinary research and be open to interacting with domain experts outside the candidate's discipline.

Applicants must provide evidence of good English language skills, written and spoken. The following tests can be used as such documentation: TOEFL, IELTS or Cambridge Certificate in Advanced English (CAE) or Cambridge Certificate of Proficiency in English (CPE). Minimum scores are:

- TOEFL: 600 (paper-based test), 92 (Internet-based test),
- IELTS: 6.5, with no section lower than 5.5 (only Academic IELTS test accepted),

- CAE/CPE: grade B or A.

In extraordinary circumstances, formal documentation of language skills can be relinquished. In such cases, the candidate's language skills will be assessed as part of a personal interview.

The appointment is to be made in accordance with the regulations in force concerning State Employees and Civil Servants and [national guidelines for appointment as PhD, postdoctor and research assistant](#)

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

## Personal characteristics

In the evaluation of which candidate is best qualified, emphasis will be placed on education, experience and personal suitability, as well as motivation, in terms of the qualification requirements specified in the advertisement

## 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

PhD candidates are remunerated in code 1017, and are normally remunerated at gross from NOK 479 600 before tax per year. From the salary, 2 % is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 3, but preferable 4 years (including an equivalent of 1 year of additional duties distributed over the employment period). Appointment to a PhD position requires admission to the PhD programme in Computer Science (<https://www.ntnu.edu/studies/phdcs>).

As a PhD candidate, you undertake to participate in an organized PhD programme during the employment period. A condition of appointment is that you are in fact qualified for admission to the PhD programme within three months.

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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.

## 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. 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.

The national labour force must reflect the composition of the population to the greatest possible extent, NTNU wants to increase the proportion of women in its scientific posts. Women are encouraged to apply. NTNU is a multi-campus university (with the main campus in Trondheim, and further campuses in Gjøvik and Ålesund). The advertised position is situated at NTNU's campus Gjøvik, NTNU's most Southern campus. Being situated at the largest inland lake of Norway, Gjøvik has a scenic setting and international workforce and is in close proximity to Norway's largest international airport. Gjøvik offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life.

Questions about the PhD position, please contact Associate Professor Christopher Frantz, e-mail: [christopher.frantz@ntnu.no](mailto:christopher.frantz@ntnu.no), Professor Marius Pedersen, Leader of IDI Gjøvik, e-mail: [marius.pedersen@ntnu.no](mailto:marius.pedersen@ntnu.no) or Head of the Department of Computer Science Professor John Krogstie, e-mail: [john.krogstie@ntnu.no](mailto:john.krogstie@ntnu.no).

About the application:

Publications and other academic works that the applicant would like to be considered in the evaluation must accompany the application. Joint works will be considered. If it is difficult to identify the individual applicant's contribution to joint works, the applicant must include a brief description of his or her contribution.

The application must contain:

- Statement of Purpose. The statement includes the applicant's motivation for the advertised position and elaborate on how the applicant's background fits into this project, including skills beyond the ones listed as part of the requirements. In the statement the candidate shall highlight the opportunities of computational policy modelling, how the candidate would approach modelling policy, and which aspects of modelling policy the applicant deems most challenging. The Statement of Purpose should further discuss how the applicant's specific competence can contribute to addressing these challenges and outline policy areas of interest. As part of this document, please also indicate your availability (start date). (2 pages)
- Curriculum Vitae (CV) with information about prior education, evidence of English language proficiency, training and work experience, as well as other information substantiating claims made in the Statement of Purpose.
- Certified copies of transcripts and diplomas
  - Applicants from universities outside Norway are kindly requested to send a diploma supplement or a similar document, which describes in detail the study and grading system and the rights for further studies associated with the obtained degree

- Contact information for at least 2 references
  - References will only be contacted if the candidate is shortlisted.
- A copy of the master thesis (in PDF), or, for those who are near to completion of their MSc, an extended abstract combined with a statement indicating the anticipated completion of the thesis
- Link to developed software project(s) (if applicable)
- Selection of maximum two publications in English language (if applicable)
- List of publication(s) (if applicable)

The application should be written in English language. Incomplete applications will not be taken into consideration.

Please submit your application electronically via [jobbnorge.no](http://jobbnorge.no) with your CV, diplomas and certificates (more details below). Incomplete applications, or applications submitted elsewhere will not be considered. A Diploma Supplement is required for European Master Diplomas outside Norway. Chinese applicants are required to provide confirmation of their Master Diploma from China Credentials Verification (CHSI): <http://www.chsi.com.cn/en/>.

Applicants invited for interview must include certified copies of transcripts and reference letters. Please refer to the application number 2017/17105 when applying.

**Application deadline: 30.08.2019**

## **NTNU - knowledge for a better world**

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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 Computer Science**

We are the leading academic IT environment in Norway, and offer a wide range of theoretical and applied IT programmes of study at all levels. Our subject areas include hardware, algorithms, visual computing, AI, databases, software engineering, information systems, learning technology, HCI, CSCW, IT operations and applied data processing. The Department has groups in both Trondheim and Gjøvik. The [Department of Computer Science](#) is one of seven departments in the [Faculty of Information Technology and Electrical Engineering](#).

Jobbnorge-ID: 173086, Søknadsfrist: Søknadsfristen er gått ut