



# PhD candidate on Safe Reinforcement Learning and Risk-based control

## About the position

We have one vacancy for PhD candidate at 100%. The position report to Prof. Sebastien Gros, and will be part of his research group. The candidate will be integrated in the department of Eng. Cybernetic at NTNU and will be encouraged to interact with the other PhD students, postdoc and researcher there. Collaborations with other departments will also be sought.

The PhD candidate will perform research on Safe Reinforcement Learning and Risk-based control, whereby control policies are improved using available data, while respecting given safety constraints, possibly probabilistically. The position will perform mostly theoretical research and tests in simulations. The candidate will be working in an exciting and growing environment, and acquire an expertise on a several research areas of high relevance.

## Main duties and responsibilities

- Perform excellent and independent research on the topic attached to the position
- Publish in top-ranking journals and conferences
- Interact with the research group where this position will be hosted
- Teaching duties (if qualified and in agreement with the candidate)

## Qualification requirements

The qualification requirement is completion of a master's degree or second degree (equivalent to 120 credits) with a strong academic background in Control Theory, Model Predictive Control and Mathematics in general 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.

The appointments are to be made in accordance with the regulations in force concerning State Employees and Civil Servants and national guidelines for appointment as PhD, post doctor and research assistant.

### Main qualifications

- Strong expertise on Model Predictive Control, theory and practice
- Strong expertise in Reinforcement Learning and Dynamic Programming
- Strong expertise on probability theory and sampling techniques
- Strong expertise on optimal control methods

### Other qualifications

- MATLAB or Python programming
- Numerical optimal control tools (e.g. casaDi, ipopt)
- Excellent written and oral English, academic writing

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

## Personal characteristics

- self-driven and independent
- rigorous and reliable
- team worker

In the evaluation of which candidates are best qualified, emphasis will be placed on education, experience and personal suitability, 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 per annum before tax. From the salary, 2% is deducted as a contribution to the Norwegian Public Service Pension Fund.

The period of employment is 4 years with teaching duties, 3 years without. Appointment to a PhD position requires admission to the PhD programme in Engineering Cybernetic (<https://www.ntnu.edu/studies/phtk>).

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.

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.

## 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. 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. Furthermore, Trondheim offers great opportunities for education (including international schools) and possibilities to enjoy nature, culture and family life (<http://trondheim.com/>). Having a population of 200 000, Trondheim is a small city by international standards with low crime rates and little pollution. It also has easy access to a beautiful countryside with mountains and a dramatic coastline.

Questions about the position can be directed to [sebastien.gros@ntnu.no](mailto:sebastien.gros@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.

Please submit your application electronically via [jobbnorge.no](http://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): <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 2019/40770 when applying.

**Application deadline: 29.02.2020.**

## NTNU - knowledge for a better world

### **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 of Engineering Cybernetics (ITK)**

Engineering cybernetics is the study of automatic control and monitoring of dynamic systems. We develop the technologies of tomorrow through close cooperation with industry and academia, both in Norway and internationally. The Department contributes to the digitalization, automation and robotization of society. The [Department of Engineering Cybernetics](#) is one of seven departments in the [Faculty of Information Technology and Electrical Engineering](#).

Jobbnorge-ID: 180000, Søknadsfrist: 29. februar 2020