



PhD candidate

About the position

Are you passionate about engaging in doctoral level research to solve scientific problems within the area of Data Based and Adaptive Model Predictive Control and Optimal Control, a topic with great industrial significance? If yes then this position may be for you. This exciting research project will be carried out at the Department of Engineering Cybernetic (<https://www.ntnu.edu/itk>), in close collaboration with the NTNU Artificial Intelligence initiative. The research will be performed under the supervision of Prof. S. Gros.

Main duties and responsibilities

Reinforcement Learning (RL) is a specific class of techniques that deals with the optimal control of dynamic systems. RL has attracted a lot of academic and public attention lately by beating masters in Chess and Go games. Despite its early successes, the current state-of-the-art in RL suffers from some drawbacks, making it difficult to introduce in industrial applications. In this PhD project, we will investigate and develop novel ideas combining RL and classic, formal optimal control and Model Predictive Control in order to address some of the deficiencies in the field. A strong expertise of classic Model Predictive Control theory is required to carry out this task. You will carry out research on this topic in collaboration with Prof. S. Gros and his colleagues. The focus will be on theory and simulations, but some laboratory experiments are possible.

Qualification requirements

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 Control and Optimization and Reinforcement Learning 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.

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, post doctor and research assistant.

Other required qualifications

- Strong background in MPC, Optimal Control, and if possible Reinforcement Learning
- Strong mathematical skills (systems dynamic, probability and statistics, optimization theory)
- Excellent Matlab or Python programming skills
- Excellent written and oral English skills

Personal characteristics

- Strong analytical skills, synthetic, capable of handling and expressing complex ideas easily
- Strong capabilities for abstract and mathematical thinking
- Resilient and ambitious, self-motivated
- Team player, good at collaborating, respectful
- Resourceful, autonomous and independent

In the evaluation of which candidate is 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 449 400 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 3 or 4 years (with or without required duties). Appointment to a PhD position requires admission to the PhD programme in Engineering Cybernetics (<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 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

[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.

Questions about the position can be directed to Prof. S. Gros, e-mail sebastien.gros@ntnu.no , grosse@chalmers.se .

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 jobb norge.no with your CV, diplomas and certificates. Applicants invited for interview must include certified copies of transcripts and reference letters. Please refer to the application number 2019/13661 when applying.

Application deadline: 31.07.2019.

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 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: 170327, Søknadsfrist: Søknadsfristen er gått ut