

The Norwegian University of Science and Technology (NTNU) in Trondheim represents academic eminence in technology and the natural sciences as well as in other academic disciplines ranging from the social sciences, the arts, medicine, teacher education, architecture to fine art. Cross-disciplinary cooperation results in innovative breakthroughs and creative solutions with far-reaching social and economic impact.

Faculty of Natural Sciences and Technology
Department of Chemical Engineering

1 Postdoc/PhD Position in Fast Hierarchical Economic MPC

The Department of Chemical Engineering at NTNU offers an exciting full-time research position in the area of fast hierarchical model predictive control.

The Department of Chemical Engineering is one of the most productive departments at NTNU in terms of high quality research and publications. It attracts a large number of international students and provides an excellent working environment for starting an academic career.

Our international activity and collaborations with research universities world-wide lead to good opportunities for participating in international conferences and extended research periods abroad. We have very good contacts to industry, which leads to industrially relevant research and also gives possibilities for industry placements. Our multicultural working culture is built on openness and trust, and provides a large amount of flexibility and independence. The flat organizational hierarchy guarantees accessible supervisors and effective mentoring.

Further information about the Department of Chemical Engineering may be obtained from <http://www.ntnu.edu/chemeng>

About the research

This project addresses important theoretical aspects of hierarchical economic model predictive control. The planned research ranges over two areas:

- **Fast numerical optimization algorithms**
This subproject aims at studying and improving a fast sensitivity-based path-following algorithm that was developed in collaboration with Professor Biegler at Carnegie Mellon University.
- **Optimal design of a hierarchical economic model predictive control system**
This subproject studies methods for optimally designing the layers in a hierarchical control system for dynamic optimization.

For more information about the research contact Associate Professor Johannes Jäschke +47-735-93691, email: jaschke@ntnu.no.

We offer

- Informal and friendly work place with dedicated colleagues
- Possibility for extended research visit at Carnegie Mellon University, USA
- Family-friendly work conditions
- Excellent opportunities for outdoor activities
- Competitive salary

Qualifications

The successful candidate should be creative, with a strong ability to work problem oriented. He/she should also enjoy interdisciplinary research and take interest in learning and working in teams.

Requirements for candidates applying for a postdoc position

A PhD in an optimization-related field will have to be received before 30. August 2015. One or preferably both of the following are required:

- Documented experience in the study of SQP and Newton methods for solving parametric NLP.
- Documented experience with theoretical aspects of model predictive control.

Experience in mathematical modelling, optimization and control of process systems is of advantage. We expect a commitment to a postdoc period of 3 years.

Applicants for a postdoc position are requested to enclose a 2-page research proposal draft.

Requirements for candidates applying for a PhD fellowship

A Masters' degree in an optimization-related engineering field is required. We are looking for candidates with a strong background in nonlinear programming techniques (SQP, Interior point methods) and nonlinear model predictive control.

The regulations for PhD programs at NTNU state that a Master's degree or equivalent with at least 5 years of studies and an average grade of A or B within a scale of A-E for passing grades (A best) for the two last years of the MSc is required and C or higher of the BSc. Candidates from universities outside Norway are kindly requested to send a Diploma Supplement or a similar document, which describes in detail the study and grade system and the rights for further studies associated with the obtained degree:
http://ec.europa.eu/education/tools/diploma-supplement_en.htm

The position requires spoken and written fluency in the English language. Applicants from non-English-speaking countries outside Europe must document English skills by an approved test. Approved tests are TOEFL, IELTS and Cambridge Certificate in Advanced English(CAE) or Cambridge Certificate of Proficiency in English (CPE).
Detailed information on our PhD program is found at: <http://www.ntnu.edu/nt/research/phd>

Terms of employment

The appointment has a duration of 3 years and is financed by the Norwegian Research Council. The appointment of the postdoc/PhD fellows will be made according to Norwegian guidelines for universities and university colleges and to the general regulations regarding university employees. Applicants for the PhD position must agree to participate in organized doctoral study programs within the period of the appointment and have to be qualified for the PhD-study.

NTNU's personnel policy objective is that the staff must reflect the composition of the population to the greatest possible extent.

The application

Applications with CV, authorized documentation of previous education, study records, including a list of subjects, grades and publications, work experience as well as achievements in research are to be submitted electronically through www.jobbnorge.no. Please also give contact details for 3 references.

Applications submitted elsewhere will not be considered.

Reference number: NT-31/15

Application deadline: 17.5.2015.

Jobbnorge ID: 113110, Deadline: 5/17/2015