Curriculum Vitae

Christian Larsson

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Born: December 15, 1983 in Västerås, Sweden
Nationality: Swedish

Education

2014 Doctor of Philosophy in Automatic Control, KTH Royal Institute of Technology, Sweden.

Thesis: Application-oriented experiment design for industrial model predictive control.

Supervisor: Prof. Håkan Hjalmarsson

2011 Licentiate of Engineering in Automatic Control, KTH Royal Institute of Technology, Sweden.

Thesis: Toward applications oriented optimal input design with focus on model predictive control.

Supervisor: Prof. Håkan Hjalmarsson

2009 Master of Science in Engineering Physics, Uppsala University, Sweden.

Applied on Electrical Engineering and Automatic Control.

Thesis: Model based diagnosis of retarder using Rodon.

Research Fields

System identification, Statistical models, Predictive models, Optimal input design, Identification for MPC, Nonlinear systems.

Projects

My research has been conducted within two projects, which both have involved a high degree of cooperation between researchers at different European universities as well as with industrial partners.

WIDE

A project for decentralized and wireless control of large-scale systems. We provided system identification and input design tools for the predictive controllers used. Project website: `http://cse.lab.imtlucca.it/hybrid/wide/`.

Autoprofit

A joint project between several universities and industries. We developed tools for system identification and online adaptation of models in predictive controllers, aimed at increasing the life time performance, autonomy and economic benefits of model based support systems. Technologies were developed in close collaboration with the industrial partners and and were tested on an industrial process at the Sasol refinery in South Africa, with promising results. Project website: `http://www.fp7-autoprofit.eu`.

Teaching

Supervised Master's Theses

2013   Eva Andersson, *Development of a dynamic model for start-up optimization of coal-fired power plants.*
2012   Daniel Macias, *Estimation of fuel consumption for real time implementation.*
2012   Antonio Balsemin, *Applications oriented input design for MPC: An analysis of a quadruple water tank process.*

Courses

2011–13   Teaching Assistant, Modeling of Dynamic Systems, Electrical Engineering, KTH.
2010   Teaching Assistant, Project Course in Automatic Control, Electrical Engineering, KTH.
2009–10   Teaching Assistant, Basic Course in Automatic Control, Electrical Engineering, KTH.
2007–09   Lab Assistant, Computer Programming (Java), IT department, Uppsala University.

Personal skills and competences

Language skills

Swedish – Mother tongue.
English – Advanced.
German – Intermediate.
Mandarin – Beginner.

Computer skills

Matlab/Simulink, Modelica, Java, C++, Unix, Windows, and OS X.

References

References given on request.

Publications

Journal articles

J3   C. A. Larsson, P. Hägg, H. Hjalmarsson, *Generation of signals with specified second order properties for constrained systems*, International Journal of Adaptive Control and Signal processing, submitted.

J2   C. A. Larsson, A. Ebadat, C. R. Rojas, H. Hjalmarsson, *An application-oriented approach to dual control with excitation for closed-loop identification*, European Journal of Control, submitted.

J1   C. A. Larsson, C. R. Rojas, X. Bombois, H. Hjalmarsson, *Experimental evaluation of model predictive control with excitation (MPC-X) on an industrial depropanizer*, Journal of Process Control, submitted.

Conference papers

C14   H. Guidi, C. A. Larsson, Q. N. Tran, L. Özkan, A.C.P.M. Backx, *Autonomous maintenance of advanced process control: Application to an industrial depropanizer*, 2014 AIChE Spring meeting, New Orleans.

C13   P. Hägg, C. A. Larsson, A. Ebadat, B. Wahlberg, H. Hjalmarsson, *Input signal generation for constrained multiple-input multiple-output systems*, Submitted to 19th IFAC World Congress, Cape Town, 2014.

C12   A. Ebadat, B. Wahlberg, H. Hjalmarsson, C. R. Rojas, P. Hägg, C. A. Larsson, *Applications oriented input design in time-domain through alternating methods*, Submitted to 19th IFAC World Congress, Cape Town, 2014.

C11   A. Ebadat, M. Annergren, C. A. Larsson, C. R. Rojas, B. Wahlberg, H. Hjalmarsson, M. Molander, J. Sjöberg, *Application set approximation in optimal input design for model predictive control*, Submitted to the European Control Conference, Strasbourg, 2014.

C10   M. Annergren, D. Kauven, C. A. Larsson, M. G. Potters, Q. Tran, L. Özkan, *On the way to autonomous model predictive control: A distillation column simulation study*, 10th international symposium on Dynamics and Control of process systems, Mumbai, 2013.

C9   C. A. Larsson, M. Annergren, H. Hjalmarsson, C. R. Rojas, X. Bombois, A. Mesbah, P. E. Modén, *Model predictive control with integrated experiment design for output error systems*, Proceedings of the European Control Conference, Zürich, 2013.

C8   P. Hägg, C. A. Larsson, H. Hjalmarsson, *Robust and Adaptive Excitation Signal Generation for Input and Output Constrained Systems*, Proceedings of the European Control Conference, Zürich, 2013.

C7   C. A. Larsson, P. Hägg, H. Hjalmarsson, *Generation of excitation signals with prescribed autocorrelation for input and output constrained systems*, The American Control Conference, June 17-19, Washington DC, 2013.

C6   M. Annergren and C. A. Larsson, *MOOSE - A model based optimal input design toolbox*, IFAC Proceedings Volumes 16, 16th IFAC Symposium on System Identification, July 11-13, Brussels, 2012.

C5   C. A. Larsson, E. Geerardyn and J. Schoukens, *Robust input design for resonant systems under limited a priori information*, IFAC Proceedings Volumes 16, 16th IFAC Symposium on System Identification, July 11-13, Brussels, 2012.

C4   C. A. Larsson, M. Annergren and H. Hjalmarsson, *On optimal input design for model predictive control*, IEEE Conference on Decision and Control, Orlando, FL, USA, 2011.

C3   C. A. Larsson, H. Hjalmarsson and C. R. Rojas, *MPC oriented experiment design*, IFAC World Congress 2011.

C2   C. A. Larsson, H. Hjalmarsson and C. R. Rojas, *Identification of nonlinear systems using misspecified predictors*, Proceedings of IEEE Conference on Decision and Control, Atlanta, GA, USA, 2010.

C1   C. A. Larsson, H. Hjalmarsson and C. R. Rojas, *On optimal input design for nonlinear fir-type systems*, Proceedings of IEEE Conference on Decision and Control, Atlanta, GA, USA, 2010.