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# Daniel Simon

Senior Engineer Research and Development, Flight Control Systems

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*I am an industry-employed Ph.D. student (industridoktorand) at the Division of Control and Communication Systems at the Department of Electrical Engineering at Linköpings universitet (University of Linköping). I am employed by Saab Aeronautics where I have worked with flight control development since late 2005. I have mainly worked with research and requirements definition for Unmanned Aerial Vehicles (so called UAV's). I have worked within international research projects such as ETAP and MIDCAS to design capabilities and set requirements for future unmanned flight control systems. Today I have been appointed by the Swedish Aviation Authority the role of Compliance Verification Engineer for Flight Control and Autoflight Systems on Saab's civil aircraft fleet. I started my Ph.D. studies in 2011 and they are being funded by VINNOVA and the NFFP-program. My research interest is Nonlinear optimal control of constrained systems and its application to flight control law design. I am interested in the high level optimal control problem formulation and its stability and robustness properties.*

## EXPERIENCE

### **Saab AB**

*January 2006 - Present (10 years 11 months)*

#### **Senior System Engineer**

Current job description: - Industry employed PhD student, research Nonlinear Optimal Control, 80% of full time (since 2011) - Compliance Verification Engineer, ATA 22/27/29/32, 20% of full time (since 2013) Former job tasks: - UAV Flight Control research (ETAP, MIDCAS) - Control law analysis/development and clearance-Equipment development

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### **Linköping University**

*2004 - 2005 (1 year)*

#### **Teaching Assistant**

Part time working as a teaching assistant for laboratory work in the basic control course for M.Sc. in engineering students.

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### **Linköping University**

*2004 - 2005 (1 year)*

#### **Student guidance counselor**

Part time work assisting the office of guidance counselors for the M.Sc. educations.

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### **Billerud Korsnäs**

*October 1999 - August 2001  
(1 year 11 months)*

#### **Process Operator**

managing various parts of the paper mill process such as the drying section of the paper machine, paper rolling machine and packaging machine. Working shift work, .i.e., working either mornings, afternoons or nights.

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**Holmen Paper**  
**Process Operator**

*June 1999 - October 1999*  
*(5 months)*

Working in the production line of the paper mill.

*EDUCATION*

**Linköping University**

*2011 - 2017*

**Doctor of Philosophy (PhD), Automatic Control,**

**Linköping University**

*2011 - 2014*

**Licentiate degree of Engineering, Automatic Control,**

**Linköping University**

*2001 - 2005*

**Master's Degree, Applied Physics and Electrical Engineering,**

Master's Degree, Applied Physics and Electrical Engineering, 2001 - 2005

*CERTIFICATIONS*

**Compliance Verification Engineer**

*September 2013*

**Swedish Aviation Authority**

*LANGUAGES*

**English (Full professional proficiency) , Swedish (Native or bilingual proficiency) , French , (Elementary proficiency)**

*SKILLS*

Control Theory, Model Predictive Control, Sensor Fusion, Target tracking, Signal Processing, System Identification, Optimization, Machine Learning, Matlab, Simulink, Julia, C/C++, LaTeX, Simulations, Systems Engineering

*PUBLICATIONS*

**A Command Governor Approach to Maneuver Limiting in Fighter Aircraft**

*To appear*

**AIAA, Journal of Guidance, Navigation and Control**

*Journal paper*

**Reference Tracking MPC using Dynamic Terminal Set Transformation**

*Oktober 2014*

**IEEE Transactions on Automatic Control**

*Journal paper*

**A Command Governor Approach to  
Maneuver Limiting in Fighter Aircraft**

*January 2017*

**AIAA, Guidance, Navigation and Control  
Conference**

*Conference Paper, (Parallell publishing of Journal paper)*

**Stability analysis of Model Predictive  
Controllers using Mixed Integer Linear  
Programming**

*December 2016*

**IEEE, Conference on Decision and Control**

*Conference Paper*

**Robust MRAC augmentation of flight  
control laws for centre of gravity  
adaptation.**

*October 2016*

**Swedish Aerospace Technology Congress**

*Conference Paper*

**Design and Test of of Discrete Time  
Adaptive Backup Flight Control Laws**

*August 2014*

**IFAC World Congress**

*Conference Paper*

**Nonlinear Model Predictive Control  
using Feedback Linearization and Local  
Inner Convex Constraint Approximations**

*July 2013*

**IEEE, European Control Conference**

*Conference Paper*

**Reference Tracking MPC using Terminal  
Set Scaling**

*December 2012*

**IEEE, Conference on Decision and Control**

*Conference Paper*

**Model Predictive Control in Flight  
Control Design - Stability and Reference  
tracking**

*January 2014*

**LiU-Tryck**

Licentiate Thesis