Developing merged CDIO based curricula for diploma (B.Eng.) IT study programs at DTU

Starting 2007, the Danish government drew up a new map of universities through a process of mergers of a number of universities and research institutions (UFM 2007), as part of the national innovation strategy. In the beginning of 2013, the Engineering College Copenhagen (IHK, now DTU Ballerup) merged with the Technical University of Denmark (DTU Lyngby). The goal of the merger was to educate ever more innovative diploma engineers to fulfill the needs by Danish industry through combining a practice-oriented development environment and a research-oriented environment.

Merging a university with an engineering college implies merging two different cultures: established teaching staff, different study lines; a difficult undertaking at best. Existing study lines must be merged, overlaps and differences identified and handled, and in general a common understanding and language must be established.

The two institutions represented before the merger well 3500 B.Eng students. The goal of the merger was to combine the best of the existing educations rooted in a practice-oriented development environment and a research-oriented environment. At the same time, the merger was supposed to contribute to the national innovation strategy.

In this paper we describe the process of developing new, merged B.Eng curricula in the IT field (Diploma IT), as part of the merger between DTU Lyngby and IHK. Particular attention will be given to the following subjects:

• The design process used to develop the new merged study programs;
• Involvement of stakeholders in designing the new curricula;
• Introduction of a common interdisciplinary innovation course in the programs; and
• Education of teaching staff: Integration into one organization.

General information
State: Published
Organisations: Department of Applied Mathematics and Computer Science, Software Engineering, Language-Based Technology, Embedded Systems Engineering
Authors: Nyborg, M. (Intern), Probst, C. W. (Intern), Stassen, F. (Intern)
Number of pages: 12
Publication date: 2015
**Design Rules and Electrical Parameters for a 90nm CMOS process**

A set of fictitious simplified geometrical design rules and tables of electrical parameters are presented describing a 90nm CMOS process for educational purposes only.

**General information**
State: Published
Organisations: System-on-Chip Hardware, Department of Informatics and Mathematical Modeling
Authors: Stassen, F. (Intern)
Publication date: 2007

**Publication information**
Original language: English
Main Research Area: Technical/natural sciences
CMOS design rules
Source: orbit
Source-ID: 224032
Publication: Education › Compendium/lecture notes – Annual report year: 2007

**High-Speed Low Power Design in CMOS**

Static CMOS design displays benefits such as low power consumption, dominated by dynamic power consumption. In contrast, MOS Current Mode Logic (MCML) displays static rather than dynamic power consumption. High-speed low-power design is one of the many application areas in VLSI that require consideration. In this work, delay and power metrics for both MCML and CMOS have been studied and a broader analysis of MCML is presented. Near minimum sized transistors are used and power consumption is measured for a wide variety of circuit blocks. The most important goal of this project is to evaluate the appropriate domains of performance and power requirements in which MCML presents benefits over standard CMOS. An optimized cell library is designed and implemented in both CMOS and MCML in order to make a comparison with reference to speed and power. Much more time is spent in order to understand the theoretical description of MOS Current Mode Logic, and it is found that it is more difficult to model and simulate the circuit with compare to standard CMOS because of the differential inputs and low voltage swing.

**General information**
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Authors: Ghani, A. (Ekstern), Usmani, S. H. (Ekstern), Stassen, F. (Intern)
Publication date: 2004

**Host publication information**
Title of host publication: Symposium on Topics in Semiconductors and Workshop on Nanotechnologies
Main Research Area: Technical/natural sciences
Links:
Source: orbit
Source-ID: 154586
Publication: Research › Article in proceedings – Annual report year: 2004

**Design Rules and Electrical Parameters for a 0.25 micron CMOS Process**

**General information**
State: Published
On the 50th Anniversary of the Transistor

General information
State: Published
Organisations: Department of Information Technology
Authors: Stassen, F. (Intern)
Number of pages: 5
Publication date: 1997

Publication Information
Original language: English
Main Research Area: Technical/natural sciences
Source: orbit
Source-ID: 167459
Publication: Research - peer-review › Book – Annual report year: 1997

Practical Aspects of CMOS Layout

General information
State: Published
Organisations: Department of Information Technology
Authors: Stassen, F. (Intern)
Number of pages: 50
Publication date: 1996

Publication Information
Original language: English
Main Research Area: Technical/natural sciences
Links:
http://www.it.dtu.dk/~stassen/Notes/RobustLayout
Source: orbit
Source-ID: 166533
Publication: Research - peer-review › Book – Annual report year: 1996

Digital Design Using Module Generators

General information
State: Published
Organisations: Computer Science and Engineering, Department of Informatics and Mathematical Modeling
Authors: Madsen, J. (Intern), Stassen, F. (Intern)
Publication date: 1986

Host publication information
Title of host publication: Proceedings of the 2nd NORSILC/NORCHIP Seminar
Main Research Area: Technical/natural sciences
Conference: Proceedings of the 2nd NORSILC/NORCHIP Seminar, 01/01/1986
Source: orbit
Source-ID: 200231
Publication: Research - peer-review › Article in proceedings – Annual report year: 1986
Projects:

NordSecMob Master’s Programme in Security and Mobile Computing - 2 continuation
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering
Aalto University
KTH - Royal Institute of Technology
Norwegian University of Science and Technology
University of Tartu
Period: 01/08/2016 → 31/07/2018
Number of participants: 1
Acronym: NordSecMob
Project participant:
Stassen, Flemming (Intern)

UAV Ground Control System
Development of a ground control system for a special purpose unmanned aerial vehicle
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering
Authel Systems IVS
Period: 30/11/2015 → 01/03/2016
Number of participants: 4
Project participant:
Stassen, Flemming (Intern)
Farabi Khanghahi , Fatimeh (Ekstern)
Working partner:
Steffensen, Rasmus (Ekstern)
Haaning, Christian (Ekstern)

SafeCores InfinIT Mini Project
To investigate the business potential and technical feasibility of Safe Programmable Intellectual Property (IP) Cores
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering
Siemens A/S
Confiware ApS
Danfoss A/S
Period: 01/06/2012 → 31/01/2013
Number of participants: 4
Acronym: SafeCores
Project participant:
Pop, Paul (Intern)
Todirica, Edward Alexandru (Intern)
Petersen, Bjarne (Ekstern)
Project Manager, academic:
Stassen, Flemming (Intern)
Financing sources
Source: Public research council
Name of research programme: InfinIT
Amount: 216,000.00 Danish Kroner
Year of approval: 2012
Source: Other private funding (private)
Name of research programme: Siemens A/S
Amount: 107,100.00 Danish Kroner
Year of approval: 2012
Source: Other private funding (private)
Name of research programme: Sauer-Danfoss
Amount: 48,000.00 Danish Kroner
Year of approval: 2012
Source: Other private funding (private)
Name of research programme: Confiware ApS
Amount: 85,200.00 Danish Kroner
Year of approval: 2012

Functional Safety for Industrial Components
To investigate the technical feasibility of Safe Programmable Intellectual Property (IP) Cores realized on safe FPGAs.

(Project mhp ansøgning om støtte under HTF-programmet)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering
Confiware ApS
Danfoss A/S
Siemens A/S
University of Southern Denmark
Period: 01/02/2012 → 31/01/2013
Number of participants: 4
Acronym: SafeCores
Project participant:
Stassen, Flemming (Intern)
Todirica, Edward Alexandru (Intern)
Pop, Paul (Intern)
Petersen, Bjarne (Intern)

NordSecMob Master's Programme in Security and Mobile Computing - 2
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering
Aalto University
Norwegian University of Science and Technology
KTH - Royal Institute of Technology
University of Tartu
Period: 01/08/2011 → 31/07/2017
Number of participants: 1
Acronym: NordSecMob
Project participant:
Stassen, Flemming (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Nordplus
Nordic Master School in Innovative Information and Communication Technologies
Department of Applied Mathematics and Computer Science

Embedded Systems Engineering
Period: 01/09/2009 → 31/08/2013
Number of participants: 1
Acronym: NMS iICT
Project participant:
Stassen, Flemming (Intern)

Financing sources
Source: Other public support (public)
Name of research programme: Nordplus framework programme
Amount: 40,000.00 Euro
Year of approval: 2009

Relations
Activities:
Nordic Master School in Innovative ICT (NMS iICT) (External organisation)

Nordplus Framework Programme for Higher Education
Nordic Master School in Innovative Information and Communication Technologies
Department of Applied Mathematics and Computer Science

Embedded Systems Engineering
Period: 01/09/2009 → 31/08/2013
Number of participants: 3
Acronym: NMS iICT
Project participant:
Stassen, Flemming (Intern)
Pop, Paul (Intern)
Madsen, Jan (Intern)

Relations
Activities:
Nordic Master School in Innovative ICT (NMS iICT) (External organisation)

NordSecMob Master's Programme in Security and Mobile Computing
Department of Applied Mathematics and Computer Science

Embedded Systems Engineering
Aalto University
KTH - Royal Institute of Technology
Norwegian University of Science and Technology
University of Tartu
Period: 01/08/2006 → 31/07/2012
Number of participants: 1
Acronym: NordSecMob
Project participant:
Stassen, Flemming (Intern)

Financing sources
Source: Public research council
Name of research programme: Nordplus
Amount: 151,000.00 Euro
Source: EU research programme (public)
Name of research programme: Erasmus Mundus
Amount: 4,844,000.00 Euro
Source: Unknown
Name of research programme: Tuition fees
Amount: 520,000.00 Euro

PATMOS’98 workshop

Department of Information Technology
Period: 01/01/1998 → 30/10/1998
Number of participants: 3
Project participant:
Madsen, Jan (Intern)
Stassen, Flemming (Intern)
Project Manager, organisational:
Sparsø, Jens (Intern)

Financing sources
Source: Unknown
Name of research programme: Ukendt
Amount: 37,000.00 Danish Kroner
Source: Unknown
Name of research programme: Ukendt
Amount: 25,000.00 Danish Kroner
Source: Unknown
Name of research programme: Ukendt
Amount: 25,000.00 Danish Kroner

Designmetodologi for højhastighedskredsløb
Department of Electrical Engineering
Period: 01/09/1989 → 01/07/1996
Number of participants: 3
Phd Student:
Jensen, Ole Perch (Intern)
Supervisor:
Stassen, Flemming (Intern)
Main Supervisor:
Olesen, Ole (Intern)

Financing sources
Source: Internal funding (public)
Name of research programme: DTU-stipendium
Project: PhD

Activities:

NordSecMob Network meeting (Event)
Period: 19 Feb 2016
Flemming Stassen (Reviewer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

**Description**
NordSecMob Network meeting

29 selection meeting

**Related event**

**NordSecMob Network meeting 2016**
19/02/2016 → …
Finland
Activity: Communication › Peer review of manuscripts

**10 years of NordSecMob: The NordSecMob journey**
Period: 17 Oct 2015
Flemming Stassen (Invited speaker)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

**Related event**

**NordSecMob Alumni Conference**
17/10/2015 → 18/10/2015
Stockholm, Sweden
Activity: Talks and presentations › Conference presentations

**NordSecMob Network meeting 2015 (Event)**
Period: 29 Jan 2015 → 30 Jan 2015
Flemming Stassen (Reviewer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

**Description**
NordSecMob Network meeting

29 selection meeting

**Related event**

**NordSecMob Network meeting 2015**
29/01/2015 → …
Finland
Activity: Research › Peer review of manuscripts

**Erhvervs- og Vækstministeriet (External organisation)**
Period: 1 Jul 2014 → 30 Jun 2019
Flemming Stassen (Participant)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

**Description**
Appeal Board of Patents and Trademarks

Technical reviewer (reappointment)

Body type: Appeal Board
Related external organisation

Erhvervs- og Vækstministeriet
Slothsolmsgade 10-12, 1216, København K, Denmark
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

NordSecMob Network meeting 2014 (Event)
Period: 29 Jan 2014 → 30 Jan 2014
Flemming Stassen (Reviewer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
NordSecMob Network meeting
27 selection meeting.

Related event

NordSecMob Network meeting 2014
29/01/2014 → …
Finland
Activity: Research › Peer review of manuscripts

NordSecMob Winter School on Innovation
Period: 6 Jan 2014 → 11 Jan 2014
Flemming Stassen (Organizer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
Winter school for NordSecMob students, PhDs and Academics
NordSecMob Winter School on Innovation
Documents:
NSM14WS - Programme

Related event

NordSecMob Winter School on Innovation: Security and Mobile Computing
06/01/2014 → 07/03/2014
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

NordSecMob Network meeting 2013 (Event)
Period: 24 Jan 2013 → 25 Jan 2013
Flemming Stassen (Reviewer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
NordSecMob Network meeting
25 selection meeting

Related event
NordSecMob Network meeting 2013
24/01/2013 → …
Finland
Activity: Research › Peer review of manuscripts

6th ACM/IEEE International Symposium on Networks-on-Chip
Period: 9 May 2012 → 11 May 2012
Flemming Stassen (Organizer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Related event
6th ACM/IEEE International Symposium on Networks-on-Chip
09/05/2012 → 11/05/2012
Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

18th IEEE International Symposium on Asynchronous Circuits and Systems
Period: 7 May 2012 → 9 May 2012
Flemming Stassen (Organizer)
Department of Informatics and Mathematical Modeling
Computer Science and Engineering
Embedded Systems Engineering

Description
Finance chair
ASYNC 2012 - 18th IEEE International Symposium on Asynchronous Circuits and Systems

Related event
18th IEEE International Symposium on Asynchronous Circuits and Systems
07/05/2012 → 09/05/2012
Kgs. Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

NordSecMob Network meeting 2012 (Event)
Period: 1 Feb 2012 → 2 Feb 2012
Flemming Stassen (Reviewer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
NordSecMob Network meeting
23 selection meeting

Related event
NordSecMob Network meeting 2012
01/02/2012 → 02/02/2012
Finland
Activity: Research › Peer review of manuscripts

NordSecMob Network meeting 2011 (Event)
Period: 26 Jan 2011 → 28 Jan 2011
Flemming Stassen (Reviewer)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

**Description**
NordSecMob Network meeting: 21 Selection meeting

**Related event**

**NordSecMob Network meeting 2011**
26/01/2011 → …
Finland
Activity: Research › Peer review of manuscripts

**Korean Advanced Institute of Science and Technology (KAIST)**
Flemming Stassen (Visiting researcher)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

**Description**
Official visit DTU KAIST (Republic of Korea)
Activity: Visiting an external institution › Visiting another research institution

**KAIST-DTU Dual Degree Master Program in Computer Science**
Period: 19 Jun 2010 → 31 Jul 2017
Flemming Stassen (Other)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

**Description**
Coordinated by Flemming Stassen
Links:
http://www.dtu.dk/english/Education/msc/Programmes/computer_science_and_engineering

**Related external organisation**

**Korea Advanced Institute of Science and Technology (KAIST)**
Daejeon, Korea, Republic of
Activity: Other

**NordSecMob Network meeting**
Period: 6 May 2010
Flemming Stassen (Participant)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

**Description**
NordSecMob Network meeting: 19 Supplementary Selection meeting

**Related event**

**NordSecMob Network meeting: 19 Supplementary Selection meeting**
06/05/2010 → 06/05/2010
Finland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.
Period: 1 Apr 2010 → 31 Aug 2017
Flemming Stassen (Other)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
Coordinated by Flemming Stassen
Links:
Activity: Other

NordSecMob Network meeting
Period: 18 Jan 2010 → 19 Jan 2010
Flemming Stassen (Participant)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

Description
NordSecMob Network meeting: 17 Selection meeting

Related event
NordSecMob Network meeting: 17 Selection meeting
18/01/2010 → 19/01/2010
Finland
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Erhvervs- og Vækstministeriet (External organisation)
Period: 1 Jul 2009 → 30 Jun 2014
Flemming Stassen (Participant)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
Appeal Board of Patents and Trademarks

Technical reviewer (reappointment)

Body type: Appeal Board
Links:
http://www.pvanke.dk/pvanke/

Related external organisation
Erhvervs- og Vækstministeriet
Slotholmsgade 10-12, 1216, København K, Denmark
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Nordic Master School in Innovative ICT (NMS iICT) (External organisation)
Period: 16 Jan 2009 → 31 Aug 2014
Flemming Stassen (Participant)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
NMS iICT - Nordic Master School in Innovative Information and Communication Technologies

Related external organisation

Nordic Master School in Innovative ICT (NMS iICT)
Turku, Finland
Activity: Membership › Membership of research networks or expert groups

13th Nordic Workshop on Secure IT Systems
Flemming Stassen (Organizer)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Related event

13th Nordic Workshop on Secure IT Systems
09/10/2008 → 10/10/2008
Kongens Lyngby, Denmark
Activity: Attending an event › Participating in or organising a conference

Erasmus Mundus Master's Programme in Security and Mobile Computing
Period: 1 Aug 2005 → 31 Aug 2012
Flemming Stassen (Organizer)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

Description
Erasmus Mundus Master's Programme in Security and Mobile Computing: National coordinator
Links:
http://www.imm.dtu.dk/English/Teaching/MSc/Erasmus_Mundus.aspx (EXT-OA)

Related event

Erasmus Mundus Master's Programme in Security and Mobile Computing
01/08/2005 → …
Activity: Attending an event › Participating in or organising workshops, courses, seminars etc.

Økonomi- og Erhvervsmisteriet (External organisation)
Period: 1 Jul 2004 → 30 Jun 2009
Flemming Stassen (Participant)
Department of Applied Mathematics and Computer Science
Embedded Systems Engineering

Description
Appeal Board of Patents and Trademarks

Technical reviewer (reappointment)

Body type: Appeal board
Links:
http://www.pvanke.dk/pvanke

Related external organisation

Økonomi- og Erhvervsmisteriet
Ankenævnet for Patenter og Varemærker (External organisation)
Period: 1 Jul 1999 → 30 Jun 2004
Flemming Stassen (Participant)
Department of Informatics and Mathematical Modeling
Embedded Systems Engineering

Description
Technical reviewer
Links:
http://www.pvanke.dk/(EXT-OA)

Related external organisation
Ankenævnet for Patenter og Varemærker
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar