

MT-LAB

A VKR CENTRE OF EXCELLENCE

MT-LAB SCIENTIFIC BOARD:

DTU: Flemming Nielson (director), Hanne Riis Nielson and Bo Friis Nielsen.

AAU: Kim G. Larsen (vice-director), Rafael Wisniewski, and Arne Skou.

ITU: Jens Christian Godskesen, and Andrzej Wąsowski.

REVISION OF THE MT-LAB RESEARCH PLAN – PART 1

The research of MT-LAB focuses on three overall challenges as expressed by the themes:

1. Static analysis versus Model checking
2. Embedded systems versus Service-oriented systems
3. Components versus Global characteristic features

During the establishment phase of MT-LAB (the first two years) this has been further concretised into the establishment of a roadmap as well as a number of research tasks: (A) Technology Transfer, (B) Beyond Finiteness, (C) Stochastic Analysis, (D) Hybrid Systems, (E) Resource Usage, (F) Service Level Guarantees, and (G) Interfaces.

In preparation for the continuation phase of MT-LAB (the next three years) the task structure has been reconsidered in light of the insights gained and the activities started – in particular as indicated in the research plans of the many PhD students associated with MT-LAB. This has been a combination of a top-down process (carried out by the steering committee) for choosing the *strands* and a bottom-up process (carried out by all the participants of MT-LAB) for determining the many sub-strands that fit within the strands. The titles of the strands are:

1. Stochastics in Computer Science
2. Model checking and static analysis
3. Security protocols and policies
4. Synthesis
5. Real-time systems and resources and data constrained systems
6. Conformance testing and statistical model checking

The strand structure gives a very good indication of the work planned for the next years. It will be combined by a sharpening of the themes so as to give a slight adjustment of the overall direction of the activities of MT-LAB; the next issue of MT-LAB News will report on this.

10TH-11TH JANUARY 2011

The 11th MT-LAB workshop takes place at the IT University. It features a number of talks as well as a discussion of the new strands of MT-LAB.

SCIENTIFIC TALKS

- Mogens Bladt (visitor): Phase-type distributions and heavy tails.
- Sebastian Bauer (visitor): Extending Modal Transition Systems with Structured Labels.
- Flemming Nielson: The Strands of MT-LAB.
- Jens Chr. Godskesen: Probabilistic Mobility Models for Mobile and Wireless Networks.
- Radu Mardare: Modular Markovian Logic.
- Michael Smith: Modeling at Different Levels of Abstraction: A Case Study.
- Espen Højsgaard: Experience report on Building a Simulator for Stochastic Bigraphs.
- Sebastian Mödersheim: Verifying SeVeCom Using Set-based Abstraction.
- Christopher Sloth: Timed Game Control of the Inverted Pendulum.
- Lijun Zhang: Safety Verification for Probabilistic Hybrid Systems.
- Jose Quaresma: From protocol specification to protocol implementation.
- Kim Guldstrand Larsen: IDEA4CPS.



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VISITING SCIENTIST MIN ZHANG 21ST JANUARY – 15TH APRIL 2011

Dr. Min Zhang is from the Software Engineering Institute at the East China Normal University (ECNU) and is visiting MT-LAB for three months based on a scholarship from the Erasmus Mundus program "NordSecMob". In 2007 Min Zhang obtained a joint PhD degree from the universities Shanghai Jiao Tong and Paris 7. Min Zhang's major research interests are in quantitative analysis of hybrid systems and at MT-LAB she has given presentations on *Approximate Simulation for Metric Hybrid Input/Output Automata*.

Min Zhang comes from the research group at ECNU taking part in the new Danish-Chinese research project called *IDEA4CPS: Foundations for Cyber-physical Systems* funded by the Danish National Research Foundation and the National Natural Science Foundations of China. This project shares many of its goals with MT-LAB and Min Zhang's visit lays the foundation for research relationships between MT-LAB and ECNU.



VISITING PROFESSOR MOGENS BLADT 10TH-21ST JANUARY 2011



Mogens Bladt is professor at in the Department for Statistics at the National University of Mexico. He is an expert on applied probability with special emphasis on the field of matrix-exponential methods. His research interests are mainly centered on applied probability, stochastic processes and financial mathematics.

NEW MT-LAB POST-DOC: LOUIS MARIE TRAONOUZ

Dr. Louis Marie Traonouez joined MT-LAB as a post-doc from 15th January 2011. He obtained his PhD from the University of Nantes in 2009 on the topic *Model checking and unfoldings of parametric time Petri nets*. After a post-doc period at the university of Florence, Italy, he has now joined MT-LAB and will focus on timed specifications and advanced in the line of work on the ECDAR tool.



1ST - 6TH NOVEMBER 2010

Dr. Benoit Delahaye from INRIA Rennes visited MT-LAB and collaborated on Constraint Markov Chains.

11TH NOVEMBER 2010

Professor Per Christian Hansen from DTU Informatics is an expert on Scientific Computing and gave a talk titled *I can see clearer now – the blur is gone*.

22ND - 26TH NOVEMBER 2010

Dr. Axel Legay from INRIA Rennes visited MT-LAB and collaborated on a number of topics including Constraint Markov Chains, Statistical Model Checking and Real-Time and Data Interfaces.

22ND - 26TH NOVEMBER 2010

Dr. Peter Bulychev, Lomonosov Moscow State University, Russia, visited MT-LAB and collaborated on a game-theoretic approach to simulation checking. Peter Bulychev will join CISS, Aalborg, as a post-doc starting March 2011.

26TH NOVEMBER 2010

Professor Chris Hankin from Imperial College London visited MT-LAB to collaborate on aspect oriented policy specification languages.

13TH JANUARY 2011

Professor Miklos Telek from the Technical University of Budapest visited MT-LAB and gave a talk with the title *On Minimal Representation of Rational Arrival Processes*.

27TH JANUARY 2011

Dr. Radu Mardare (MT-LAB and CISS Aalborg) has been awarded **Sapere Aude Young Elite Researcher 2011** by the Danish Ministry of Research for the project "Modular Markovian Logics for Analysis of Stochastic Concurrent Systems".



The minister for science, technology and innovation, Charlotte Sahl-Madsen, gave the award to Radu Mardara.