HÁSKÓLINN Í REYKJAVÍK
REYKJAVIK UNIVERSITY

A GUIDE TO iFM 2016

12th International Conference on **integrated Formal Methods**
June 1st-5th in Reykjavik, Iceland

CRESS
Center for Research on Engineering Software Systems

1. General Information

The 12th International Conference on Integrated Formal Methods and Workshops takes place on June 1-5, 2016, at Reykjavík University (RU), Menntavegi 1, 101 Reykjavik, Iceland.

Registration Desk

CP Reykjavik is in charge of the registration, accommodation bookings and social arrangements.
Opening hours:
Wednesday, 1 June (08:00-10:30),
Thursday, 2 June (08:30-10:30),
Saturday, 4 June (08:00-10:30)
Tel: Kristjana; +354 820-4339, Thórunn +354 696-4600

If there is no one at the registration desk, then please refer to the university reception in Sólin.

Conference rooms

Invited talks take place from 9:00 to 10:00 in M101.
There are parallel sessions in the morning which take place in rooms M101 and V102.
Afternoon sessions take place in M101.

Internet access

Use the following wireless internet access information:
SSID: Conference
passw: Ljosa74pera

Moreover, eduroam works at RU.

Chairs

Please be present in the lecture hall at least 10 minutes prior to your session. It is important that sessions stay on schedule. It is vital that all speakers observe their time allotment.

Speakers

All speakers are asked to contact their session chair before the beginning of the session.

Technical help

If you need any technical help in the lecture rooms call 6260 from the phone in the room (or +354 599 6260 from outside).

Badges

All participants are requested to wear their personal badge throughout the meeting. The badge is the entrance ticket to all sessions. Should you misplace your badge, a replacement can be obtained at the Registration desk.

Coffee breaks and lunches

Coffee, tea, refreshments will be served in Sólin (open area at the university) and all three lunches will be served in Café Nauthóll (2 minutes walk from the university).

Professional Congress Organizer – PCO

CP Reykjavík, Conference Management Services Ltd.
Address: Suðurlandsbraut 6, 108 Reykjavík. Tel: +354 510 3900, **www.cpreykjavik.is**

Local Transport

Reykjavik University is located next to Öskjuhlíð hill, one of Reykjavík's green areas shaped by the Ice Age. Bus line 5 stops in front of the university "Nauthóll - HR", terminal station. You can enter line 5 at Hlemmur, one of Reykjavik's central bus hubs, Snorrabraut, or BSÍ. The direction is "Nauthóll" and the final bus stop is Nauthóll - HR. Exit the bus at its final bus stop "Nauthóll - HR".

You can buy single trip tickets on the bus for 420 ISK. You must pay the exact fare in cash. The driver will not change and will not accept credit cards. If you use the Straeto app, you can register your credit card and use it to pay on the bus. Additional fees may apply for a mobile phone data connection. Multi-day passes and a 20 ride ticket are available at select locations see: **www.straeto.is/english/buy-tickets**. Ask at your hotel's reception if they offer bus tickets.

During the summer season, buses will run every 30 minutes during the day times. Observe that on Sundays the first bus to HR leaves Hlemmur at 10:16.

For more information on local buses, check **www.straeto.is/english**

You can use the trip planner to check the best route from your hotel to Reykjavik University.

2. Social Activities

Welcome Reception
Wednesday June 1, at 17:30, Cafe Nauthóll (2 minutes walk from the university)

Conference dinner
Thursday June 2, at 19:30, at Restaurant Kolabraut located on the 4th floor of Harpa concert hall and conference centre. Extra tickets for the Conference dinner can be bought at the registration desk, June 1st from 8:30 – 10:30.

Please note there is no scheduled transport.

Excursion
Optional conference excursion "Reykjavík Erupts" is on the 2nd of June.
Departure from: Café Nauthóll at 13:30.
Drop off: at 18:30, city center (close to the conference dinner restaurant, Harpa) and Icelandair Hotel Natura
Tickets can be bought at the Registration desk.

Seltún, The most active volcanic system at the Reykjavik area erupts every 500-1000 years. The last eruption was 850 years ago so in fact the system is overdue. When an eruption starts the magma chamber underneath Seltún expands coursing a break out that can rip the earth open as close as few kilometres from the city.
We take a walk around the area with a guide specialized in the geology and volcanic activity of the area. It is a perfect time to take pictures, enjoy the nature and each other's company.

On our way from Seltún we stop at Maríuhellar, a perfect and easy to access example of a lava tube cave.
We park a short walk away from the river and when we get there we can see the lava that ran through this part of the city some 4.600 years ago.

We enjoy the beautiful area and a perfect view point over the waterfalls, answer questions about the area, take pictures (and perhaps a snaps for those who want) before going back to the hotel.

If you do not participate in this excursion, the conference web page collects some other suggestions. Do not hesitate to ask the staff for help.


Harpa Concert Hall and Conference Centre
Kolabrautin
City Center Hotel
Iðnó
Hótel Cabin
Alda Hotel
Radisson Blu Saga Hotel
BSÍ
Bus Hotel Reykjavik
Icelandair Hotel Natura
Reykjavik University
Nauthóll
Sólfarið (Sun Voyager)
Hallgrímskirkja
Vatnsmýri
Klambratún
Perlan
Reykjavíkurflugvöllur
Valsvöllur
Fossvogskirkjugarður
OLD WEST SIDE
HLEMMUR
NORÐURMÝRI
MIÐBORG

3. Program Overview

	Wednesday June 1	Thursday June 2	Friday June 3	Saturday June 4	Sunday June 5
8:45-09:00	Opening (M101)				
9:00-10:00	Invited Talk 1 (M101)	Invited Talk 2 (M101)	Invited Talk 3 (M101)	Workshop Sessions	Workshop Sessions
10:00-10:30	Coffee Break	Coffee Break	Coffee Break	Coffee Break	Coffee Break
10:30-12:00	**Session 1 (M101)** **Session 2 (V102)**	**Session 5 (M101)** **Session 6 (V102)**	**Session 7 (M101)** **Session 8 (V102)**	Workshop Sessions	Workshop Sessions
12:00-13:30 (Nauthóll)	**L**	**U**	**N**	**C**	**H**
13:30-15:00	**Session 3 (M101)**	Excursion	**Session 9 (M101)**	Workshop Sessions	Workshop Sessions
15:00-15:30	Coffee Break		Coffee Break	Coffee Break	Coffee Break
15:30-17:00	**Session 4 (M101)**		**Session 10 (M101)**	Workshop Sessions	Workshop Sessions
	Reception (Nauthóll, 17:15)		Closing Session (M101, 17:00-17:15)		
	SC Meeting (V102, 18:15)	IFM Dinner (Kolabrautin, 19:30)		UTP Dinner (Iðnó, 18:30)	

4. Keynote Talks

Wednesday June 1

9:00 – 10:00 iFM, Room M101
Reiner Hähnle (Technical University Darmstadt, Germany)
Can Formal Methods Improve the Efficiency of Code Reviews?

Thursday June 2

9:00 – 10:00 iFM, Room M101
Marsha Chechik (University of Toronto, Canada)
Dimensions of Model Transformation Reuse

Friday June 3

9:00 – 10:00 iFM, Room M101
Laura Kovács (Chalmers University of Technology, Sweden)
Symbolic Computation and Automated Reasoning for Program Analysis

Saturday June 4

9:00 – 10:00 UTP, Room V102
Tony Hoare (Microsoft Research, Cambridge, UK)
Unifying Models and Laws for Concurrency and Distribution in Object-Oriented Programs

10:30-11:30 iFM Cloud, Room M104
Gul Agha (UIUC, USA)
Actors and Meta-Actors: Two-Level for Reasoning about Cloud Infrastructure

10:55 - 11:55 Pre-Post, Room M105
Kim G. Larsen (Aalborg University, Denmark)
From Pre-Verification and -Analysis to Post-Synthesis and -Optimization for Timed and Hybrid Systems.

13:30 - 14:30 Pre-Post, Room M105
Dino Distefano (Facebook and Queen Mary, University of London, UK)
Reasoning with Big Code

9:00-10:00 V2CPS, Room V108
Sanjoy Baruah (University of North Carolina at Chapel Hill, USA)
Analysis-based approaches to achieving timing predictability

Sunday June 5

9:00–10:00 UTP, Room V102
Jifeng He (East China Normal University, China)
A New Roadmap on Linking Theories of Programming

08:30-09:30 PhD Symposium, Room M104
Mohammad Reza Mousavi (Halmstad University, Sweden)
How to Write and Present a Computer Science Paper

13:30-14:30 PhD Symposium, Room M104
Carlo Ghezzi (Politecnico di Milano, Italy)
Formal models and verification to support software evolution

iFM PROGRAM

Wednesday, June 1

9:00-10:00 Invited talk 1
Room M101, Chair: Erika Abraham

Reiner Hähnle.
Can Formal Methods Improve the Efficiency of Code Reviews?

10:30-12:00 Session 1: Program verification
Room M101, Chair: Gerardo Schneider

Ferruccio Damiani and Michael Lienhardt.
On Type Checking Delta-Oriented Product Lines

Leo Freitas, James Baxter, Ana Cavalcanti and Andy Wellings.
Verifying a priority scheduler for an SCJ runtime environment

Michael Ameri and Carlo A. Furia. Why Just Boogie?
Translating Between Intermediate Verification Languages

10:30-12:00 Session 2: Probabilistic systems
Room V102, Chair: John Derrick

Sean Sedwards, Pedro D'Argenio, Arnd Hartmanns and Axel Legay.
Statistical Approximation of Optimal Schedulers for Probabilistic Timed Automata

Oana Andrei, Muffy Calder, Matthew Chalmers, Alistair Morrison and Mattias Rost.
Probabilistic Formal Analysis of App Usage to Inform Redesign

Lubos Korenciak, Vojtech Rehak and Adrian Farmadin.
Extension of PRISM by Synthesis of Optimal Timeouts in Fixed-delay CTMC

13:30-15:00 Session 3: Concurrency I
Room M101, Chair: Heike Wehrheim

Hosein Nazarpour, Ylies Falcone, Saddek Bensalem, Marius Bozga and Jacques Combaz.
Monitoring Multi-threaded Component-Based Systems

Sascha Fendrich and Gerald Luettgen.
A Generalised Theory of Interface Automata, Component Compatibility and Error

Ian Cassar and Adrian Francalanza.
On Implementing a Monitor-Oriented Programming Framework for Actor Systems

15:30-17:00 Session 4: Concurrency II (Room M101)
Room M101, Chair: Ferruccio Damiani

Gerhard Schellhorn, Oleg Travkin and Heike Wehrheim.
Towards a Thread-Local Proof Technique for Starvation Freedom

Olaf Owe.
Reasoning about Inheritance and Unrestricted Reuse in Object-Oriented Concurrent Systems

Matt Luckcuck, Ana Cavaltanti and Andy Wellings.
A Formal Model of the Safety-Critical Java Level 2 Paradigm

Thursday, June 2

9:00-10:00 Invited talk 2
Room M101, Chair: Marieke Huisman

Marsha Chechik.
Dimensions of Model Transformation Reuse

10:30-12:00 Session 5: Safety and liveness
Room: M101, Chair: Einar Broch Johnsen

Stephan Barth.
Deciding Monadic Second Order Logic over omega-words by Specialized Finite Automata

Christian Prehofer.
Property Preservation for Extension Patterns of State Transition Diagrams

Jens Bendisposto, Philipp Koerner, Michael Leuschel, Jeroen Meijer, Jaco Van de Pol, Helen Treharne and Jorden Whitefield.
Symbolic Reachability Analysis of B through ProB and LTSmin

10:30-12:00 Session 6: Model learning
Room V102, Chair: Reiner Hähnle

Petra van den Bos, Rick Smetsers and Frits Vaandrager.
Enhancing Automata Learning by Log-Based Metrics

Mathijs Schuts, Jozef Hooman and Frits Vaandrager.
Refactoring of Legacy Software using Model Learning and Equivalence Checking: An Industrial Experience Report

Wei Chen, David Aspinall, Andrew D. Gordon, Charles Sutton and Igor Muttik.
On Robust Malware Classifiers by Verifying Unwanted Behaviours

Friday, June 3

9:00-10:00 Invited talk 3
Room M101, Chair: Marjan Sirjani

Laura Kovács.
Symbolic Computation and Automated Reasoning for Program Analysis

10:30-12:00 Session 7: SAT and SMT solving
Room: M101, Chair: Cesar Sanchez

Pedro Antonino, Bill Roscoe and Thomas Gibson-Robinson.
Efficient Deadlock Checking using Local Analysis and SAT Solving

Sebastian Krings and Michael Leuschel.
SMT Solvers for Validation of B and Event-B models

Andrii Kovalov and Juliana Küster Filipe Bowles.
Avoiding Medication Conflicts for Patients with Multimorbidities

10:30-12:00 Session 8: Testing
Room: V102, Chair: Wolfgang Ahrendt

Adrian Riesco and Juan Rodriguez-Hortala.
Temporal Random Testing for Spark Streaming

Elvira Albert, Miguel Gomez-Zamalloa and Miguel Isabel.
Combining Static Analysis and Testing for Deadlock Detection

Renáta Hodován and Akos Kiss.
Fuzzing JavaScript Engine APIs

13:30-15:00 Session 9: Theorem proving and constraint satisfaction
Room: M101, Chair: Laura Kovacs

Andreas Müller, Stefan Mitsch, Werner Retschitzegger, Wieland Schwinger and André Platzer.
A Component-based Approach to Hybrid Systems Safety Verification

Viorel Preoteasa.
Verifying Pointer Programs using Separation Logic and Invariant Based Programming in Isabelle

Pavel Zaichenkov, Olga Tveretina and Alex Shafarenko.
A Constraint Satisfaction Method for Configuring Non-Local Service Interfaces

15:30-17:00 Session 10: Case studies
Room: M101, Chair: Marcel Kyas

Bjørnar Luteberget, Christian Johansen and Martin Steffen.
Rule-based Consistency Checking of Railway Infrastructure Designs

Dániel Darvas, István Majzik and Enrique Blanco Viñuela.
Formal Verification of Safety PLC Based Control Software

Rahul Kumar, Thomas Ball, Jakob Lichtenberg, Nate Deisinger, Apoorv Upreti and Chetan Bansal.
Enabling Static Driver Verifier using Microsoft Azure

Programme for UTP 2016

The 6th International Symposium on Unifying Theories of Programming
4-5 June 2016, Reykjavík, Iceland

Day 1 (V102 - Saturday, 4 June 2016)

9:00-9:05 **Opening**

9:05-10:05 **Invited Talk 1**

Tony Hoare (Microsoft Research, Cambridge, UK)
Unifying Models and Laws for Concurrency and Distribution in Object-Oriented Programs

10:05-10:30 **Coffee Break**

10:30-12:00 **Session 1**

(a) Towards a UTP semantics for Modelica
Simon Foster, Bernhard Thiele, Ana Cavalcanti and Jim Woodcock

(b) A Two-way Path between Formal and Informal Design of Embedded Systems
Mingshuai Chen, Anders P. Ravn, Shuling Wang, Mengfei Yang and Naijun Zhan

12:00-13:30 **Lunch**

13:30-15:00 **Session 2**

(a) A Denotational Semantics for Parameterized Networks of Synchronized Automata
Siqi Li and Eric Madelaine

(b) UTP Semantics of Reactive Processes with Continuations
Gerard Ekembe Ngondi and Jim Woodcock

15:00-15:30 **Coffee Break**

15:30-16:30 **Session 3**

Panel Discussion: UTP Past, Present and Future Directions

18:30 **Dinner**

Day 2 (V102 - Sunday, 5 June 2016)

9:00-10:00 **Invited Talk 2**

Jifeng He (East China Normal University, China)
A New Roadmap on Linking Theories of Programming.

10:00-10:30 **Coffee Break**

10:30-12:00 **Session 4**

(a) A Stepwise Approach to Linking Theories
Pedro Ribeiro, Ana Cavalcanti and Jim Woodcock

(b) An Axiomatic Value Model for Isabelle/UTP
Frank Zeyda, Simon Foster and Leo Freitas

12:00-13:30 **Lunch**

13:30-15:00 **Session 5**

(a) UTP Semantics for rTiMo
Wanling Xie and Shuangqing Xiang

(b) UTPCalc - A calculator for UTP Predicates
Andrew Butterfield

15.00-15.05 **Close**

15:05-15:30 **Coffee Break**

First International Workshop on PrePost:
Pre- and Post-Deployment Verification Techniques

Room M105

June 4

09:00 - 10:00
Those who are interested have a chance to attend **Tony Hoare's** invited talk at the 6th International Symposium on Unifying Theories of Programming.

10:00 - 10:30 Coffee break

10:30 - 11:30
Invited talk: Kim G. Larsen (Aalborg University).
From Pre-Verification and -Analysis to Post-Synthesis and -Optimization for Timed and Hybrid Systems.

11:30 - 11:55
Vignir Gudmundsson, Mikael Lindvall, Luca Aceto, Johann Bergthorsson and Dharmalingam Ganesan.
Model-based testing of mobile systems -- an empirical study on QuizUp Android App.

12:00 - 13:30 Lunch

13:30 - 14:30
Invited talk: Dino Distefano (Facebook and Queen Mary, University of London, UK).
Reasoning with Big Code

14:30 - 14:50
Annalizz Vella and Adrian Francalanza.
Preliminary Results Towards Contract Monitorability.

14:50 - 15:10
Oleg Sokolsky, Teng Zhang, Insup Lee and Michael McDougall.
Monitoring Assumptions in Assume-Guarantee Contracts.

15:10 - 15:30 Coffee break

15:30 - 15:55
Nafi Diallo, Wided Ghardallou and Ali Mili.
Program Repair by Stepwise Correctness Enhancement.

15:55 - 16:20
Sönke Holthusen, Sophie Quinton, Ina Schaefer, Johannes Schlatow and Martin Wegner.
Using Multi-Viewpoint Contracts for Negotiation of Embedded Software Updates.

16:20 - 16:25 Closing

First International Workshop on Formal Methods for and on the Cloud

Room M104

June 4

9:00-10:00
Those who are interested have a chance to attend **Tony Hoare's** invited talk at the 6th International Symposium on Unifying Theories of Programming

10:00-10:30 Coffee Break

10:30-11:30
Keynote: Actors and Meta-Actors: Two-Level for Reasoning about Cloud Infrastructure (Gul Agha)

11:30-12:00
Working session 1

12:00-13:30 Lunch

13:30-15:00
Talk1:
Configuring Cloud-Service Interfaces Using Flow Inheritance (Pavel Zaichenkov, Olga Tveretina and Alex Shafarenko)

Talk2:
An enhanced model for stochastic coordination (Nuno Oliveira and Luis Barbosa)

Working session 2

15:00-15:30 Coffee Break

15:30-16:30
Talk3:
Static Analysis using the Cloud (Rahul Kumar, Chetan Bansal and Jakob Lichtenberg)

Talk4:
Designing Resource-Aware Applications for the Cloud with ABS (Einar Broch Johnsen)

Workshop closing

First International Workshop on Verification and Validation of Cyber-Physical Systems

Room V108

June 4

Keynote

09:00-10:00
Sanjoy Baruah (University of North Carolina at Chapel Hill, USA)
Analysis-based approaches to achieving timing predictability

10:00-10:30 Coffee Break

Invited talks

10:30-11:15
Alessandro Abate (University of Oxford, UK)
Data-driven and model-based quantitative verification and correct-by-design synthesis of CPS

11:15-12:00
Sriram Sankaranarayanan (University of Colorado, Boulder, USA)
Automatic synthesis of controllers from specifications using control certificates

12:00-13:30 Lunch

13:30-14:15
Georgios Fainekos (Arizona State University, USA)
Formal requirement elicitation and debugging for testing and verification of cyber-physical systems

14:15-15:00
Jyotirmoy Deshmukh (Toyota Technical Center, Gardena, CA, USA)
Formal methods for powertrain control software

15:00-15:30 Coffee Break

Contributions

15:30-15:50
Masashi Mizoguchi and Toshimitsu Ushio.
Output Feedback Controller Design with Symbolic Observers for Cyber-physical Systems

15:50-16:10
Tobias Kappé, Farhad Arbab, Carolyn Talcott.
A Compositional Framework for Preference-Aware Agents

16:10-16:30
Devendra Bhave, Shankara Narayanan Krishna, Ashutosh Trivedi.
On Nonlinear Prices in Timed Automata

16:30-16:50
Morteza Mohaqeqi and Mohammadreza Mousavi.
Towards an Approximate Conformance Relation for Hybrid I/O Automata

16:50-17:10
Adina Aniculaesei, Daniel Arnsberger, Falk Howar, Andreas Rausch.
Towards the Verification of Safety-critical Autonomous Systems in Unknown Environments

17:10-17:30
Hyejin Joo, Kyoung-Soo We, Seunggon Kim, Chang-Gun Lee.
An End-to-End Tool for Developing CPSs from Design to Implementation

17:30-17:40 Closing the workshop

PhD Symposium at iFM'16 on Formal Methods: Algorithms, Tools and Applications (PhD-iFM'16)

Room M104

June 5

Invited Talk 1

8:30- 9:30, Room M104.
Mohammad Reza Mousavi (Halmstad University, Sweden) will talk about "How to Write and Present a Computer Science Paper".

Session 1

9:30-10:00, Room M104.
Model Based construction of reliable Concurrent Software. Raúl Nestor Neri Alborodo.

Session 2

10:30-12:00, Room M104.
Using the theory of institutions to integrate software models via refinement. Marie Farrell.
Modeling Metablic Networks in Event-B. Usman Sanwal, Luigia Petre, and Ion Petre.
The Burden of High-Level Languages: Complicated Symbolic Model Checking. Sebastian Krings.

Invited Talk 2

13:30-14:30, Room M104.
Carlo Ghezzi (Politecnico di Milano, Italy) will talk about "Formal models and verification to support software evolution".

Session 3

14:30-15:00, Room M104.
Delta-Oriented FSM-Based Testing. Masha Varshosaz and Mohammad Reza Mousavi.

Session 4

15:30-17:30, Room M104.
Specifying BYOD Policies With Authorisation Logic. Joseph Hallett and David Aspinall.
Practice-Oriented Formal Methods for PLC Programs of Industrial Control Systems. Dániel Darvas.
Software model checking in floating-points dominated C programs. Ahmed Mahdi and Martin Fränzle.
Combining parallel techniques for Cloud-Based SMT Solving. Matteo Marescotti.

ICT COST Action IC1402 - Runtime Verification beyond Monitoring (ARVI) Meeting

Room M105

June 4-5
This meeting is co-located with iFM 2016. The event will be held in conjunction with the PrePost workshop at iFM 2016.

Runtime verification (RV) is a computing analysis paradigm based on observing a system at runtime to check its expected behaviour. RV has emerged in recent years as a practical application of formal verification, and a less ad hoc approach to conventional testing by building monitors from formal specifications.

There is a great potential applicability of RV beyond software reliability, if one allows monitors to interact back with the observed system, and generalizes to new domains beyond computers programs (like hardware, devices, cloud computing and even human centric systems). Given the European leadership in computer based industries, novel applications of RV to these areas can have an enormous impact in terms of the new class of designs enabled and their reliability and cost effectiveness.

cost
EUROPEAN COOPERATION
IN SCIENCE AND TECHNOLOGY

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