ICTAC 2016 - Technical Program

	Mon. Oct. 24	Tues. Oct. 25	Wed. Oct. 26	Thur. Oct. 27	Fri. Oct. 28
0910	**Registration**	**Paper 2(3)**	**Keynote 3**	**Tutorial 3**	**Paper 7 (3)**
0940		Calculi	*Heike Wehrheim*	*Hsu-Chun Yen*	Automata
1010	**Opening**		**Coffee break**	Analysis of Petri Nets and Related Models	
1040	**Paper 1 (4)**	**Coffee break**	**Paper 5 (3)**		**Coffee break**
1110	Program Verification	**Paper 3 (3)**	Specifications	**Coffee break**	**Paper 8 (3)**
1140		Composition and Transformation		**Keynote 4**	Temporal Logics
1210			**Lunch**	*Wen-Lian Hsu*	
1240	**Lunch**	**Lunch**		**Lunch**	**Closing**
1310					**Start of the Fall School**
1350			**Paper 6(2)**		
1420	**Keynote 1**	**Keynote 2**	**Tool & Short Papers**	**Excursion**	
1450	Leonardo de Moura	Hsu-Chun Yen	**Business meeting**		
1510	**Tutorial 1 (1/2)** *Jim Woodcock*	**Coffee break**	**Coffee break**		
1530	Unifying theories of programming	**Paper 4 (4)**	**Tutorial2**		
1600	**Coffee break**	Design, Synthesis, and Testing	*Leonardo de Moura*		
1630	**Tutorial 1 (2/2)** *Jim Woodcock*		Theorem Proving using		
1700	Unifying theories of programming		Dependent Type Theory		
1730	**Break**		**PC Meeting**		
1800	**Reception**			**Banquet**	
1830-					

Monday, Oct. 24, 2016

10:10am Opening

10:40am Paper session 1: Program Verification, session chair: Jim Woodcock

Walter Guttmann.
Relation-Algebraic Verification of Prim's Minimum Spanning Tree Algorithm
Allyx Fontaine and Akka Zemmari.
Certified Impossibility Results and Analyses in Coq of Some Randomised Distributed Algorithms
Hoang Truong, Hung Dang Van, Nguyen Ngoc Khai and Duc-Hanh Dang.
Calculate statically maximum log memory used by multi-threaded transactional programs
Yi Li.
Termination of Single-Path Polynomial Loop Programs

12:40noon Lunch

14:20pm Keynote 1, session chair: Farn Wang

Dr. Leonardo de Moura (Microsoft Research)
The Lean Theorem Prover

15:20pm Tutorial 1(1/2), session chair: Farn Wang

Prof. Jim Woodcock (University of York)
Unifying theories of programming

16:10pm Coffee Break

16:30pm Tutorial 1(2/2), session chair: Farn Wang

Prof. Jim Woodcock (University of York)

Unifying theories of programming

Tuesday, Oct. 25, 2016

09:10am Paper session 2: Calculi, session chair: Hsu-Chun Yen

Flavio L. C. De Moura.
Unification in lambda calculi without propagation rules
Pierre Halmagrand.
Soundly Proving B Method Formulas Using Typed Sequent Calculus
Frank Valencia, Salim Perchy, Camilo Rueda and Michell Guzmán.
Deriving Extrusion on Constraint Systems from Concurrent Constraint Programming Process Calculi

10:40am Coffee Break

11:10am Paper session 3: Composition and Transformation, session chair: Ana Cavalcanti

Simon Foster, Frank Zeyda and Jim Woodcock.
Unifying heterogeneous state-spaces with lenses
Jon Hael Brenas, Rachid Echahed and Martin Strecker.
Ensuring Correctness of Model Transformations while Remaining Decidable
Steven Obua, Phil Scott and Jacques Fleuriot.
ProofScript: Proof Scripting for the Masses

12:40noon Lunch

14:20pm Keynote 2, session chair: Augusto C.A. Sampaio

Prof. Hsu-Chun Yen (National Taiwan University)
Petri Nets and Semilinear Sets

15:30pm Paper session 4: Design, Synthesis, and Testing, session chair: Dang Van Hung

Marta Pietkiewicz-Koutny, Maciej Koutny and Jetty Kleijn.

Synthesis of Petri Nets with Whole-place Operations and Localities

Tahiry Rabehaja, Annabelle McIver and Georg Struth.

Schedulers and finishers: on generating the behaviours of an event structure

Thomas Given-Wilson and Axel Legay.

On the Expressiveness of Symmetric Communication

Ana De Melo, Corina Pasareanu and Simone Hanazumi.

Towards MC/DC coverage of properties specification patterns

Wednesday, Oct. 26, 2016

09:10am Keynote 3, session chair: Augusto C.A. Sampaio

Prof. Heike Wehrheim (Paderborn University)

Verification of Concurrent Programs on Weak Memory Models

10:10am Coffee Break

10:40am Paper session 5: Specifications, session chair: Zhiming Liu

Diego Marmsoler and Mario Gleirscher.

Specifying Properties of Dynamic Architectures using Configuration Traces

Ana Cavalcanti, Jim Woodcock and Nuno Amalio.

Behavioural Models for FMI Cosimulations

Maike Schwammberger and Martin Hilscher.

An Abstract Model for Proving Safety of Autonomous Urban Traffic

12:10noon Lunch

13:50pm Paper session 6: Tool and Short Papers

[TOOL PAPER]

Raphaël Cauderlier and Catherine Dubois.

ML pattern-matching and recursion in the lambda-Pi-calculus modulo

[SHORT PAPER]

Étienne André.

Parametric Deadlock-Freeness Checking Timed Automata

14:50pm Business Meeting

15:10pm Coffee Break

15:30pm Tutorial 2, session chair: Farn Wang

Dr. Leonardo de Moura (Microsoft Research)

Theorem Proving using Dependent Type Theory

17:20pm PC Meeting

Thursday Oct. 27, 2016

09:10am Tutorial 3, session chair: Jim Woodcock

Prof. Hsu-Chun Yen (National Taiwan University)

Analysis of Petri Nets and Related Models

11:10am Coffee Break

Dr. Wen-Lian Hsu (Academia Sinica)
Applications of the Alignment Algorithm

12:40noon Lunch, Excursion

18:00pm Banquet

Friday, Oct. 28, 2016

09:10am Paper session 7: Automata, session chair: Yu-Fang Chen

Akim Demaille.
Derived-term Automata for Extended Weighted Rational Expressions
Parvaneh Babari, Manfred Droste and Vitaly Perevoshchikov.
Weighted Register Automata and Weighted Logic on Data Words
Renato Neves and Luis Barbosa.
Hybrid Automata as Coalgebrass

10:40am Coffee Break

11:10am Paper session 8: Temporal Logics, session chair: Lijun Zhang

Peter Nazier Mosaad, Martin Fränzle and Bai Xue.
Temporal Logic Verification for Delay Differential Equations
Alexandre Madeira, Rolf Hennicker, Manuel A. Martins and Luis Barbosa.
Dynamic Logic with Binders and its Application to the Development of Reactive Systems
Mario Benevides, Bruno Lopes and Edward Hermann Haeusler.
Propositional Dynamic Logic for Petri Nets with Iteration

12:40noon Closing

ICTAC 2016-Fall School

	Friday, Oct. 28, 2016	Saturday, Oct. 29, 2016	Sunday, Oct. 30, 2016
0910-1040 Session A		Short course 4A-B **Dr. Lijun Zhang (ISCAS)** *Probabilistic Model Checking -- Theory and Tools*	Short course 2A-B **Dr. De-Nian Yang (Academia Sinica)** *Combinatorial Group Optimization in Online Social Networks*
1040-1100 Coffee break			
1100-1230 Session B			
1230-1420	Lunch		
1420-1540 Session A	Short course 1A **Prof. Tony Tan (National Taiwan University)** *Spectrum problem and descriptive complexity: The role of logic in complexity theory*	Short course 3A-B **Prof. Hung-Yi Lee (National Taiwan University)** *Learning to use Deep learning in 3 hours*	Maybe hiking?
1540-1600 Coffee break			
1600-1730 Session B			
1730-1800			
1800-2100		Dinner	

Friday, Oct. 28, 2016

14:20pm-17:30pm, Short course 1A-B:

Prof. Tony Tan (National Taiwan University)

Title: Spectrum problem and descriptive complexity: The role of logic in complexity theory

Abstract: This course is divided into two parts.   In the first part, we will briefly review first-order logic and its role in the early development of computation theory.   We will then discuss the so-called spectrum problem, an innocent question raised by mathematicians in the 1950's.   Briefly, a set S of positive integers is called a first-order spectrum, if it is precisely the set of cardinalities of the finite models of a first-order sentence.   Spectrum problem asks the sufficient and necessary conditions for a set to be a first-order spectrum, and whether first-order spectra are closed under complement.

In the second part of the course, we will see how the efforts to settle spectrum problem gave birth to an area called descriptive complexity.   Briefly, descriptive complexity is a branch of complexity theory that aims to classify problems according to the complexity of their descriptions.   It turns out that there is a deep connection between describing a problem and the amount of resources, such as time and space, to solve the problem.   If time permits, we will also discuss some recent progress in spectrum problem.

Saturday, Oct. 29, 2016

09:10am-12:30noon, Short course 2A-B:

Prof. Lijun Zhang (Chinese Academy of Science)

Probabilistic Model Checking -- Theory and Tools

Abstract: In this talk I'll present background theories for probabilistic model checking algorithms, including the Markov chains, Markov decision processes with respect to temporal logic extensions PCTL*. In particular, I'll present some recent efficient algorithms for probabilistic linear time properties. Then, I'll survey probabilistic model checking tools, and introduce a new format for the modelling language, which can be useful to establish a platform for comparing the existing probabilistic model checkers.

14:20pm-17:30pm, Short course 3A-B:

Prof. Hung-Yi Lee (National Taiwan University)

Learning to use Deep learning in 3 hours

Abstract: By establishing new state-of-the-art performance in speech recognition, image recognition, and some natural language processing tasks, deep learning techniques have achieved tremendous successes and attracted much attention in recent years. This 3 hour tutorial will begin with the basic concepts of deep learning and show you how to implement a deep neural network by Keras. This tutorial will also cover some tips for training deep neural network and give an introduction to convolutional neural network (CNN) and recurrent neural network (RNN).

Sunday, Oct. 30, 2016

09:10am-12:30noon, Short course 4A-B:

Dr. De-Nian Yang (Academia Sinica)

Combinatorial Group Optimization in Online Social Networks

Abstract: With the emerging of various social network services, Facebook now has over 1.7 billion users, where 1.1 billion of them are daily active users. Nowadays everyone is able to identify and find the required web links and spatial locations via search engines such as Google and Google Map, respectively. Nevertheless, the techniques to find useful people in a social network according to different requirements are still in its infancy. In this talk, we will present the fundamental optimization problems, hardness results, and approximation algorithms to find a group of desired people in online social networks for different applications. We will first introduce the legacy subgraph optimization problems, such as k-core and k-plex, and then explore more practical optimization problems with applications in commercial and social-psychological domains. Finally, we will present the implementation of some useful group optimizations in Facebook.