ICECCS 2019

Conference Program

The 24TH International Conference on Engineering of Complex Computer Systems

Guangzhou, China

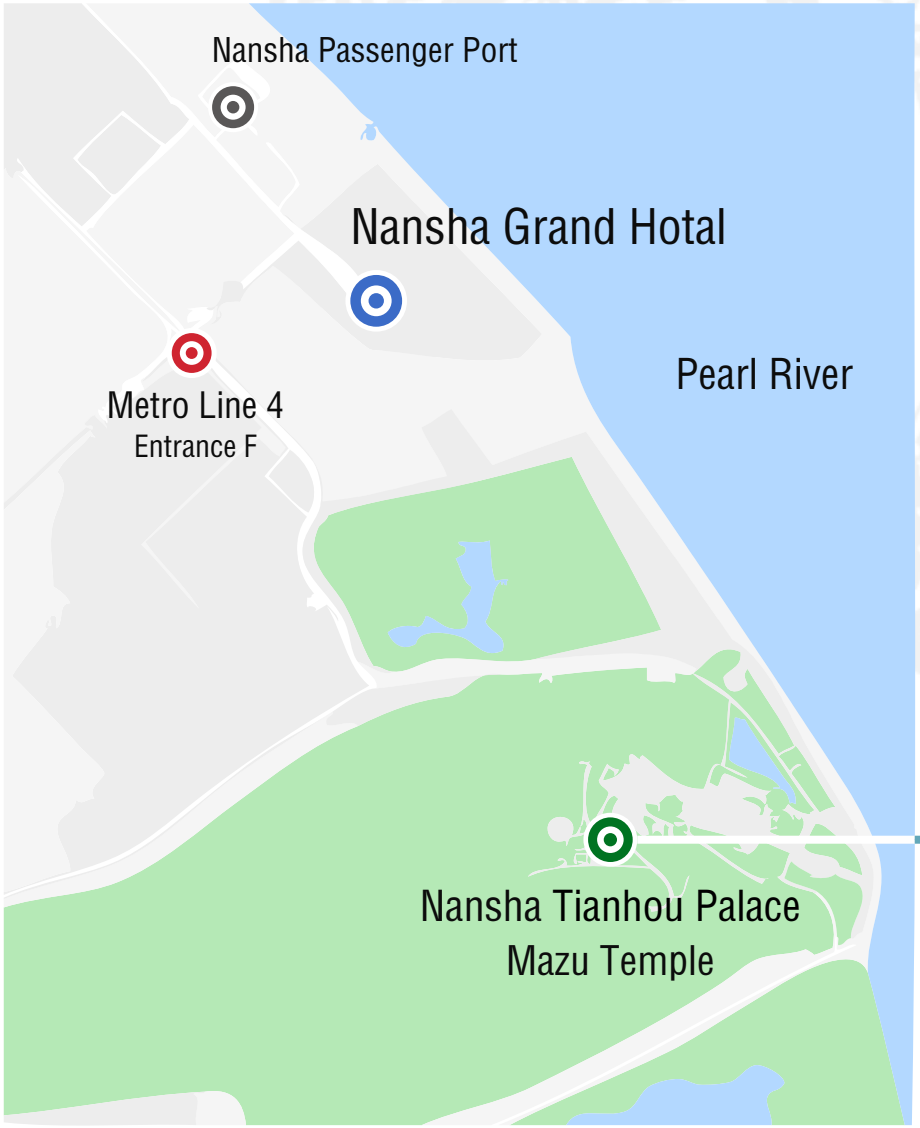
10TH - 13TH November 2019

ICECCS 2019

Conference Program

Conference Guide

Registration	Lobby , 2nd floor
Conference Main Venue	Panorama , 3rd floor
Breakfast & Conference Buffet	Café Bauhinia , M floor
Conference Dinner	Kapok Restaurant , 3rd floor (northern part)
Conference Reception	Air Garden , 4th floor



Nansha Tianhou Palace is on the southeastern slope of the Dajiao Mountain. It is the largest palace compound of its category in the world. It is reputed as the First Tianhou Palace under Heaven and the biggest Mazu Temple in southeastern Asia.

Nearby Map

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November 10th, 2019

09:00 - 11:00 **Tutorial 1**

Re-engineering Software Variability into Software Product Lines
Tewfik Ziadi

In this tutorial, after introducing Software Product Lines (SPLs) and their concepts, we introduce the re-engineering processes for SPL adoption and a summary of the research literature. Attendees will have the possibility to experiment hands-on with SPL open source tools and also on our tools for SPL re-engineering such as FeatureIDE and BUT4Reuse.

11:00 - 11:30 **Coffee Break**

11:30 - 12:30 **Tutorial 2**

Microsoft Azure Cloud Services for Machine Learning-based Model Repair (Part 1 Formal model repair with machine learning)
Jing Sun

In the first part of the tutorial, we provide a brief introduction to a machine learning-based formal model repair technique.

The first core step of the model repair technique is model checking, which refers to the use of mathematical reasoning to verify the correctness of systems.

The second core step of the model repair technique is repair synthesis and selection, which refers to the use of a SMT solver to generate repairs and the use of machine learning techniques to learn to select good repairs.

12:30 - 14:00 **Lunch Break**

14:00 - 15:00 **Tutorial 2**

Microsoft Azure Cloud Services for Machine Learning-based Model Repair (Part 2 Model repair on cloud servers)
Cheng-Hao Cai

In the second part of the tutorial, we show how to use the model repair techniques on the Microsoft Azure cloud computing platform. We will present a case study using our model repair tool.

Currently, we are working on a project named automated B model repair. This project aims to develop a tool that makes use of model checking and machine learning techniques to automatically repair faulty B models.

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

15:30 - 17:30 **Tutorial 3**

Silas: Dependable and High Performance Machine Learning
Hadrien Bride and Zhe Hou

Silas is a generic data mining and predictive analytics software built upon advanced machine learning, automated reasoning, and artificial intelligence techniques. It can deal with any type of structured data and it can be used to perform tasks such as classification, regression, segmentation, anomaly detection, prediction, etc.

November 11th, 2019

08:50 - 09:00 **Conference Opening** (Chair: Jing Sun)

09:00 - 10:00 **Keynote Talk** Data-Driven Software Automation: Toward a Decades-Long Dream
Tao Xie, Peking University
(Chair: Yang Liu)

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

Session 1: Formal Methods (Chair: Jin Song Dong)

10:30 - 11:00 LTL Model Checking of Self Modifying Code
Tayssir Touili and Xin Ye

11:00 - 11:30 Formal Verification of Dynamic and Stochastic Behaviors for Automotive Systems
Li Huang, Tian Liang and Eun-Young Kang

11:30 - 12:00 Checking Multi-Agent Systems against Temporal-Epistemic Specifications
Ran Chen and Wenhui Zhang

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

Session 2: Program Analysis (Chair: Sung-Shik Jongmans)

13:30 - 14:00 Joint Prediction of Multiple Vulnerability Characteristics Through Multi-Task Learning
Xi Gong, Zhenchang Xing, Xiaohong Li, Zhiyong Feng and Zhuobing Han

14:00 - 14:30 Static Detection of Control-Flow-Related Vulnerabilities Using Graph Embedding
Xiao Cheng, Haoyu Wang, Jiayi Hua, Miao Zhang, Guoai Xu, Li Yi and Yulei Sui

14:30 - 15:00 Industry-Oriented Project-based Learning of Software Engineering
Maria Spichkova

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

Session 3: Security (Chair: Maria Spichkova)

15:30 - 16:00 MobiDroid: A Performance-Sensitive Malware Detection System on Mobile Platform
Ruitao Feng, Sen Chen, Xiaofei Xie, Lei Ma, Guozhu Meng, Yang Liu and Shang-Wei Lin

16:00 - 16:30 Squeezing State Spaces of (Attack-Defence) Trees
Michał Knapik, Wojciech Penczek, Laure Petrucci and Teofil Sidoruk

16:30 - 16:50 QuickAdapt: Scalable Adaptation for Big Data Cyber Security Analytics
Faheem Ullah and Muhammad Ali Babar

18:30 - 21:00 **Conference Reception**

November 12th, 2019

09:00 - 10:00 **Keynote Talk** Formal Verification based on Interpolations
Shang-Wei Lin, Nanyang Technological University
(Chair: Shengchao Qin)

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

Session 4: Formal Methods (Chair: Wenhui Zhang)

10:30 - 11:00 On the Expressive Power of Invariants in Parametric Timed Automata
Étienne André, Didier Lime and Mathias Ramparison

11:00 - 11:30 Behaviour-Driven Formal Model Development of the ETCS Hybrid Level 3
Michael Butler, Dana Dghaym, Thai Son Hoang, Tope Omitola, Colin Snook, Andreas Fellner, Rupert Schlick, Thorsten Tarrach, Tomas Fischer and Peter Tummeltshammer

11:30 - 11:50 Modelling Hybrid Train Speed Controller using Proof and Refinement
Paulius Stankaitis, Guillaume Dupont, Yamine Ait-Ameur, Neeraj Kumar Singh, Alexei Iliasov and Alexander Romanovsky

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

Session 5: Scheduling (Chair: Tewfik Ziadi)

13:30 - 14:00 Efficient Contention-Aware Scheduling of SDF Graphs on Shared Multi-bank Memory
Hai Nam Tran, Alexandre Honorat, Thierry Gautier, Loïc Besnard and Jean-Pierre Talpin

14:00 - 14:30 Adaptive Randomized Scheduling for Concurrency Bug Detection
Zan Wang, Dongdi Zhang, Shuang Liu, Jun Sun and Yingquan Zhao

14:30 - 15:00 Efficient Retiming of Unfolded Synchronous Dataflow Graphs
Xue-Yang Zhu

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

Session 6: Memory Management (Chair: Zhe Hou)

15:30 - 16:00 A Formally Verified Buddy Memory Allocation Model
Ke Jiang, David Sanan, Yongwang Zhao, Shuanglong Kan and Yang Liu

16:00 - 16:30 EFLightPM: An Efficient and Lightweight Persistent Memory System
Kaixin Huang, Yan Yan and Linpeng Huang

16:30 - 16:50 Toward New Unit-Testing Techniques for Shared-Memory Concurrent Programs
Sung-Shik Jongmans

18:30 - 21:00 **Conference Dinner**

November 13th, 2019

09:00 - 10:00 **Keynote Talk** Formal Verification for Side-channel Resistance of Cryptographic Programs
Fu Song, ShanghaiTech University
(Chair: Jun Pang)

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

Session 7: Testing (Chair: Xueyang Zhu)

10:30 - 11:00 Automatic Difficulty Management and Testing in Games using a Framework based on Behavior Trees and Genetic Algorithms
Ciprian Paduraru and Miruna Paduraru

11:00 - 11:30 Safe Inputs Approximation for Black-Box Systems
Bai Xue, Yang Liu, Lei Ma, Xiyue Zhang, Meng Sun and Xiaofei Xie

11:30 - 12:00 Assessing the Relation Between Hazards and Variability in Automotive Systems
Xiaoyi Zhang, Paolo Arcaini and Fuyuki Ishikawa

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

Session 8: Program Analysis (Chair: Laure Petrucci)

13:30 - 14:00 On the Evolution of Mobile App Complexity
Jun Gao, Li Li, Tegawendé F. Bissyandé and Jacques Klein

14:00 - 14:30 Apla Generic Constraint Matching Detection and Verification
Zhengkang Zuo, Zhihao Liu, Changjing Wang, Zhen You and Qimin Hu

14:30 - 14:50 Bi-Abductive Inference for Shape and Ordering Properties
Christopher Curry, Quang Loc Le and Shengchao Qin

14:50 - 15:30 **Coffee Break**

Session 9: Security (Chair: Cheng-Chao Huang)

15:30 - 16:00 Recovering Software Architecture Product Lines
Mohamed Lamine Kerdoudi, Tewfik Ziadi, Chouki Tibermacine and Salah Sadou

16:00 - 16:20 A Formal Methods Approach to Security Requirements Specification and Verification
Quentin Rouland, Brahim Hamid, Jean-Paul Bodeveix and Mamoun Filali-Amine

16:20 - 16:40 Measuring Opacity for Non-Probabilistic DES: a SOG-based Approach
Amina Bourouis, Kais Klai and Nejib Ben Hadj-Alouane

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