Kittiphon Phalakarn

Contact Information

National Institute of Informatics
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Research Interests

- Probabilistic model checking: quantitative properties of Markov models and games
- Lattice theory and fixed point computation: value iteration, fixed point uniqueness
- Algorithm design and analysis: graph-based algorithms

Education

University of Waterloo, Ontario, Canada

Ph.D., Electrical and Computer Engineering, 2019–2023
Dissertation Topic: "On Parallel Computation of Large Smooth-Degree Isogeny"

Chulalongkorn University, Bangkok, Thailand

M.Eng., Computer Engineering, 2017–2019
B.Eng., Computer Engineering (First Class Honors), 2013–2017

Honors and Awards

Best Paper Award, ICTAC 2024

University of Waterloo Faculty of Engineering Graduate Scholarship, 2023

Ripple Graduate Fellowship, 2019–2023

Chulalongkorn University Department of Computer Engineering Graduate Fellowship, 2017–2019

Chulalongkorn University Faculty of Engineering Gold Medal of Excellence, 2017

Outstanding Academic Performance Award, Engineering Institute of Thailand, 2016

First Solution Award, ACM-ICPC World Finals 2016

Academic Experience

National Institute of Informatics, Tokyo, Japan

Researcher, Research Center for Mathematical Trust in Software and Systems (09.2023–present)
Research Intern, ERATO Metamathematics for Systems Design Project (03.2019–08.2019)

The University of Tokyo, Tokyo, Japan

Research Intern, Imai Laboratory, Department of Computer Science (06.2016–07.2016)

Teaching Experience

University of Waterloo, Ontario, Canada

Teaching Assistant

- ECE 606 Algorithm Design and Analysis, Fall 2020
- ECE 124 Digital Circuits and Systems, Spring 2020

Chulalongkorn University, Bangkok, Thailand

Teaching Assistant

- 2110201 Computer Engineering Mathematics (Linear Algebra), Winter 2019
- 2110202 Discrete Structures and Computability (Discrete Mathematics), Fall 2018
- 2110101 Computer Programming, Winter 2015, Fall 2016, Winter 2017, Spring 2017, Fall 2017, Winter 2018, Spring 2018

Peer-reviewed Publications

K. Phalakarn, S. Pruekprasert, and I. Hasuo. "Winning Strategy Templates for Stochastic Parity Games Towards Permissive and Resilient Control," Proc. of the 21st International Colloquium on Theoretical Aspects of Computing (ICTAC 2024), pp. 197–214.

K. Phalakarn, V. Suppakitpaisarn, F. Rodríguez-hendríguez, and M. A. Hasan. "Vectorized and Parallel Computation of Large Smooth-Degree Isogenies using Precedence-Constrained Scheduling," IACR Trans. on Cryptographic Hardware and Embedded Systems (TCHES), vol. 2023, issue 3, pp. 246–269.

K. Phalakarn, V. Suppakitpaisarn, and M. A. Hasan. "Speeding-Up Parallel Computation of Large Smooth-Degree Isogeny Using Precedence-Constrained Scheduling," Proc. of the 27th Australasian Conference on Information Security and Privacy (ACISP 2022), pp. 309–331.

K. Phalakarn, V. Suppakitpaisarn, and M. A. Hasan. "Single-round Lattice-based Multisignatures," Proc. of the 8th International Workshop on Information and Communication Security (WICS 2021), pp. 365–371.

K. Phalakarn, T. Takisaka, T. Haas, and I. Hasuo. "Widest Paths and Global Propagation in Bounded Value Iteration for Stochastic Games," Proc. of the International Conference on Computer Aided Verification (CAV 2020), pp. 349–371.

K. Phalakarn, K. Phalakarn, and V. Suppakitpaisarn. "Optimal Representation for Right-to-Left Parallel Scalar and Multi-Scalar Point Multiplication," International Journal of Networking and Computing (IJNC), vol. 8, no. 2, July 2018, pp. 166–185.

K. Phalakarn, and A. Surarerks. "A Matrix Decomposition Method for Odd-Type Gaussian Normal Basis Multiplication," Proc. of the 3rd International Conference on Computer and Communication Systems (ICCCS 2018), pp. 99–103.

K. Phalakarn, K. Phalakarn, and V. Suppakitpaisarn. "Optimal Representation for Right-to-Left Parallel Scalar Point Multiplication," Proc. of the 4th International Workshop on Information and Communication Security (WICS 2017), pp. 482–488.

K. Phalakarn, and A. Surarerks. "An Analysis of Computer Programs using Lambda Calculus," Proc. of the 7th International Workshop on Computer Science and Engineering (WCSE 2017), pp. 214–218.

K. Phalakarn, **K. Phalakarn**, and V. Suppakitpaisarn. "Parallelized Side-Channel Attack Resisted Scalar Multiplication Using q-Based Addition-Subtraction k-chains," Proc. of the 4th International Symposium on Computing and Networking (CANDAR 2016), pp. 140–146.

Other Publications

K. Phalakarn, K. Phalakarn, S. Prasitjutrakul, and S. Sinthupinyo. "Python 101," Textbook for 2110101 Computer Programming course (in Thai), 2017.

Professional Services

Reviewer: ATVA 2023

Skills

- Programming Languages: Python, C/C++, Java; some experiences with PRISM model checker, R, VHDL, Verilog, OpenMP API for parallel programming.
- Languages: Thai (native), English (fluent), Japanese (beginner).