



## **2024 Annual Conference on Theory and Applications of Models of Computation (TAMC 2024)**

### **Conference Program**

May 13 – May 15, 2024, The Hong Kong Polytechnic University

# 2024 Annual Conference on Theory and Applications of Models of Computation (TAMC 2024)

## Conference Program

**Conference Location:** N001, The Hong Kong Polytechnic University

**Registration Time:** May 12, 2024 (Sunday) 16:00 – 18:00

May 13, 2024 (Monday) 8:30 – 9:00

**Registration Desk:** Outside of N001 and N002, The Hong Kong Polytechnic University

Day 1 (May 13, 2024)	
9:00-10:00	<b>Keynote:</b> Some Mathematical Problems in Quantum Circuit Synthesis and Optimization. <i>Xiaoming Sun</i> <b>Chair:</b> Yixin Cao
10:00-10:30	<b>Tea Break</b>
Session 1 (Chair: Aggeliki Chalki)	
10:30-10:50	Kleene Theorems for Lasso and $\omega$ -Languages. <i>Mike Cruchten</i>
10:50-11:10	A Coq-based Infrastructure for Quantum Programming, Verification and Simulation. <i>Wenxuan Tao and Gang Chen</i>
11:10-11:30	Energy and Output Patterns in Boolean Circuits. <i>Jayalal Sarma and Kei Uchizawa</i>
11:30-11:50	Quantum Path Parallelism: A Circuit-Based Approach to Text Searching. <i>Simone Faro, Arianna Pavone and Caterina Viola</i>
11:50-12:10	On Learning Families of Ideals in Lattices and Boolean Algebras. <i>Nikolay Bazhenov and Manat Mustafa</i>
<b>Lunch</b>	
Session 2 (Chair: Debajyoti Mondal)	
14:10-14:30	Lower Bounds for the Sum of Small-size Algebraic Branching Programs. <i>C. S. Bhargav, Prateek Dwivedi and Nitin Saxena</i>
14:30-14:50	An Improved Approximation Algorithm for Metric Triangle Packing. <i>Jingyang Zhao and Mingyu Xiao</i>
14:50-15:10	An Optimal and Practical Algorithm for the Planar 2-center Problem. <i>Xuehou Tan</i>

15:10-15:30	An Improved Kernel and Parameterized Algorithm for Almost Induced Matching. <i>Yuxi Liu and Mingyu Xiao</i>
15:30-15:50	On the Power of Counting the Total Number of Computation Paths of NPTMs. <i>Aggeliki Chalki, Aris Pagourtzis, Eleni Bakali, Sotiris Kanellopoulos and Stathis Zachos</i>
15:50-16:20	<b>Tea break</b>

<b>Session 3 (Chair: Caterina Viola)</b>	
16:20-16:40	A Local Search Algorithm for Radius-Constrained k-Median. <i>Gaojie Chi and Longkun Guo</i>
16:40-17:00	Approximation Algorithms for Robust Clustering Problems Using Local Search Techniques. <i>Chenchen Wu, Moehring Rolf, Yishui Wang, Dachuan Xu and Dongmei Zhang</i>
17:00-17:20	The Parameterized Complexity of Maximum Betweenness Centrality. <i>Šimon Schierreich and José Gaspar Smutný</i>
17:20-17:40	Improved Approximation Algorithm for the Distributed Lower-bounded k-center Problem. <i>Ting Liang, Qilong Feng, Xiaoliang Wu, Jinhui Xu and Jianxin Wang</i>
17:40-18:00	A Tight Threshold Bound for Search Trees with 2-way Comparisons. <i>Sunny Atalig and Marek Chrobak</i>

<b>Day 2 (May 14, 2024)</b>	
9:00-10:00	<b>Keynote:</b> On the Finite Character of Learnability: A Fundamental Theorem of Supervised Learning. <i>Shang-Hua Teng</i> <b>Chair:</b> Siu-Wing Cheng
10:00-10:30	<b>Tea Break</b>
<b>Session 4 (Chair: Chenchen Wu)</b>	
10:30-10:50	Mechanism Design with Predictions for Facility Location Games with Candidate Locations. <i>Jiazhu Fang, Qizhi Fang, Wenjing Liu and Qingqin Nong</i>
10:50-11:10	Mechanism Design for Building Optimal Bridges between Regions. <i>Zining Qin, Hau Chan, Chenhao Wang and Ying Zhang</i>
11:10-11:30	On the 3-tree Core of Plane Graphs. <i>Debajyoti Mondal and Md. Saidur Rahman</i>

11:30-11:50	Time Efficient Implementation for Online k-server Problem on Trees. <i>Kamil Khadiev and Maxim Yagafarov</i>
11:50-12:10	Joint Bidding in Ad Auctions. <i>Yuchao Ma, Weian Li, Wanzhi Zhang, Yahui Lei, Zhicheng Zhang, Qi Qi, Qiang Liu and Xingxing Wang</i>
<b>Lunch</b>	

<b>Session 5 (Chair: Shinichi Nakano)</b>	
14:10-14:30	Some Combinatorial Algorithms on the Edge Cover Number of k-regular Connected Hypergraphs. <i>Zhongzheng Tang, Yaxuan Li and Zhuo Diao</i>
14:30-14:50	Parameterized Complexity of Weighted Target Set Selection. <i>Takahiro Suzuki, Kei Kimura, Akira Suzuki, Yuma Tamura and Xiao Zhou</i>
14:50-15:10	Offensive Alliances in Signed Graphs. <i>Zhidan Feng, Henning Fernau, Kevin Mann and Xingqin Qi</i>
15:10-15:30	Space-Efficient Graph Kernelizations. <i>Frank Kammer and Andrej Sajenko</i>
15:30-15:50	Counting on Rainbow k-connections. <i>Robert Barish and Tetsuo Shibuya</i>
15:50-16:20	<b>Tea break</b>
16:20-21:30	<p><b>Photos:</b> Outside of N001 at 16:20.</p> <p><b>Banquet:</b></p> <ul style="list-style-type: none"> <li>• Location: <i>Hung Kee Seafood Restaurant, Sai Kung Hoi Pong Square, Sai Kung.</i></li> <li>• A return trip coach will be arranged at the pick-up point outside S Core (Yuk Choi Road, near Communal Building, PolyU). See attached map.</li> <li>• We will go to the pick-up point together after the group photo.</li> <li>• The coach will depart from PolyU at 17:00 sharp.</li> <li>• The coach will depart from Restaurant at 21:30.</li> </ul>

<b>Day 3 (May 15, 2024)</b>	
9:00-10:00	<b>Keynote:</b> Lightweight Algorithms to Learning Solutions for Large-scale Maximization. <i>My T. Thai</i> <b>Chair:</b> Xujin Chen
10:00-10:30	<b>Tea Break</b>

**Session 6 (Chair: Zhongzheng Tang)**

10:30-10:50	A Gray Code of Ordered Trees. <i>Shin-Ichi Nakano</i>
10:50-11:10	Unambiguous and Co-Nondeterministic Computations of Finite Automata and Pushdown Automata Families and the Effects of Multiple Counters. <i>Tomoyuki Yamakami</i>
11:10-11:30	Endogenous Threshold Selection with Two-Interval Restricted Tests. <i>Zeyu Ren and Yan Liu</i>
11:30-11:50	Tight Double Exponential Lower Bounds. <i>Ivan Bliznets and Markus Hecher</i>
11:50-12:10	<b>Business Meeting/Closing Ceremony</b>

### Campus Map 校園地圖

**KEY TO CAMPUS MAP 校園索引**

- P 停車 Core
- W 翼 Wing
- M 樓 Block
- + 大學圖書館 University Health Service
- + 保安控制室 Guard Post
- ▲ 閣下在此 You are here
- ♿ 洗手間 Toilet
- ♿ 殘疾人士洗手間 Toilet for Disabled
- I 餐廳 / 咖啡室 / 康樂中心 / 商店 / 咖啡室 / 餐廳 / 咖啡室 / 咖啡室
- S 商店 Convenience Store

**Location-Map of Off-Campus Venues 校外場地位置圖**

1. Asia's Best Campus 亞洲最佳校園
2. Students' Union of Hong Kong Baptist University 學生會
3. Students' Union of Middlesex University 學生會
4. Hong Kong Community College 香港社區學院
5. Hong Kong Community College 香港社區學院
6. Asia's Best Campus 亞洲最佳校園
7. Off-Campus Venue 校外場地
8. Off-Campus Venue 校外場地
9. Off-Campus Venue 校外場地
10. Off-Campus Venue 校外場地

**Gathering Point for Group Transportation at 17:00 on 14 May.**

**Conference Venue, N001.**