

# COCOON 2021

The 27th International Computing and Combinatorics Conference

Tainan, Taiwan, October 24-26, 2021

[Home \(index.php\)](#)

[News \(News.php\)](#)

[Committee \(Committee.php\)](#)

[Keynotes \(Keynotes.php\)](#)

[Accepted Papers \(Accepted\\_Papers.php\)](#)

[Program](#)

[Venue \(Venue.php\)](#)



## Program

### 2021.10.25 (Mon.)

|             |   |      |      |
|-------------|---|------|------|
| 08:30-09:00 | Registration  |      |      |
| 09:00-09:30 | Opening   |      |      |
| 09:30-10:30 | Keynote Speech #1 Prof. Ding-Zhu Du<br>(University of Texas at Dallas, USA)<br>Session Chair: Prof. Sun-Yuan Hsieh    |      |      |
| 10:30-10:45 | Coffee/Tea Break  |      |      |
| 10:45-11:45 | Keynote Speech #2 Prof. Takeshi Tokuyama<br>(Kwansei Gakuin University, Japan)<br>Session Chair: Prof. Sun-Yuan Hsieh |      |      |
| 11:45-12:55 | Lunch   |      |      |
| 12:55-13:25 | A1-1  | B1-1 | C1-1 |
| 13:25-13:50 | A1-2  | B1-2 | C1-2 |
| 13:50-14:15 | A1-3  | B1-3 | C1-3 |
| 14:15-14:40 | A1-4  | B1-4 | C1-4 |
| 14:40-15:05 | A1-5  | B1-5 | C1-5 |
| 15:05-15:15 | Coffee/Tea Break  |      |      |
| 15:15-15:45 | A2-1  | B2-1 | C2-1 |

|             |      |      |      |
|-------------|------|------|------|
| 15:45-16:10 | A2-2 | B2-2 | C2-2 |
| 16:10-16:35 | A2-3 | B2-3 | C2-3 |
| 16:35-17:00 | A2-4 | B2-4 | C2-4 |
| 17:00-17:25 | A2-5 | B2-5 | C2-5 |

## Session A1: Approximation Algorithms

Session Chair: Wing-Kai Hon

- A1-1 Sheng-Yen Ko, Ho-Lin Chen, Siu-Wing Cheng, Wing-Kai Hon and Chung-Shou Liao, General Max-Min Fair Allocation.
- A1-2 Tom Davot, Lucas Isenmann and Jocelyn Thiebaut, On the approximation hardness of geodetic set and its variants.
- A1-3 Liam Roditty and Roei Tov, Approximate Distance Oracles with Improved Stretch for Sparse Graphs.
- A1-4 Pooja Goyal and B S Panda, Hardness and Approximation Results of Roman  $\{3\}$ -Domination in Graphs.
- A1-5 Richard Spence, Stephen Kobourov and Faryad Sahneh, Approximation algorithms for priority Steiner tree problems.

## Session B1: Recreational Games

Session Chair: Ho-Lin Chen

- B1-1 Suthee Ruangwises, Two Standard Decks of Playing Cards are Sufficient for a ZKP for Sudoku.
- B1-2 Win Hlaing Hlaing Myint, Ryuhei Uehara and Giovanni Viglietta, Token Shifting on Graphs.
- B1-3 Masaaki Kanzaki, Yota Otachi and Ryuhei Uehara, Computational Complexity of Jumping Block Puzzles.
- B1-4 Raimu Isuzugawa, Kodai Toyoda, Yu Sasaki, Daiki Miyahara and Takaaki Mizuki, A Card-minimal Three-Input AND Protocol Using Two Shuffles.
- B1-5 Eurinaldo Costa, Nicolas Martins and Rudini Sampaio, Spy game: FPT-algorithm and results on graph products.

## Session C1: Computational Geometry

Session Chair: Meng-Tsung Tsai

- C1-1 Stephane Durocher, Mark Keil and Debajyoti Mondal, Bottleneck Convex Subsets: Finding  $k$  Large Convex Sets in a Point Set.
- C1-2 Shin-Ichi Nakano, The Coverage problem by Aligned Disks.
- C1-3 Yannick Bosch, Peter Schäfer, Joachim Spoerhase, Sabine Storandt and Johannes Zink, Consistent Simplification of Polyline Tree Bundles.
- C1-4 Yuki Kobayashi, Yuya Higashikawa and Naoki Katoh, Improving Upper and Lower Bounds for the Total Number of Edge Crossings of Euclidean Minimum Weight Laman Graphs.
- C1-5 Ankush Acharyya, Ramesh Jallu, Vahideh Keikha, Maarten Löffler and Maria Saumell, Minimum Color Spanning Circle in Imprecise Setup.

## Session A2: Algorithms

Session Chair: Ralf Klasing

- A2-1 Edward Pyne and Salil Vadhan, Limitations of the Impagliazzo-Nisan-Wigderson Pseudorandom Generator against Permutation Branching Programs.

- A2-2 Dong Xiang and Yunzhou Ju, All-to-All Broadcast in Dragonfly Networks.  
 A2-3 Chun Lin, Chao-Yuan Huang and Ming-Jer Tsai, An Efficient Algorithm for Enumerating Longest Common Increasing Subsequences.  
 A2-4 Bugra Caskurlu, Ozgun Ekici and Fatih Erdem Kizilkaya, On Singleton Congestion Games with Resilience Against Collusion.  
 A2-5 Ben Cameron, Aaron Grubb and Joe Sawada, A Pivot Gray Code Listing for the Spanning Trees of the Fan Graph.

## Session B2: Online Algorithm and Streaming Algorithms

Session Chair: Peter Rossmanith

- B2-1 T-H. Hubert Chan and Chui Shan Lee, On the Hardness of Opinion Dynamics Optimization with  $L_1$ -Budget on Varying Susceptibility to Persuasion.  
 B2-2 Vladimir Braverman, Viska Wei and Samson Zhou, Symmetric Norm Estimation and Regression on Sliding Windows.  
 B2-3 Cheng-Hung Chiang and Meng-Tsung Tsai, Single-Pass Streaming Algorithms to Partition Graphs into Few Forests.  
 B2-4 Elisabet Burjons, Matthias Gehnen, Henri Lotze, Daniel Mock and Peter Rossmanith, The Secretary Problem with Reservation Costs.  
 B2-5 Songhua Li, Minming Li, Lingjie Duan and Victor C.S. Lee, Online Ride-Hitching in UAV Travelling.

## Session C2: Computational Geometry & Parameterized

### Complexity and Algorithms

Session Chair: Ching-Lueh Chang

- C2-1 Ching-Lueh Chang, Deterministic metric 1-median selection with a  $1-o(1)$  fraction of points ignored.  
 C2-2 Guilherme C. M. Gomes, Bruno P. Masquio, Paulo E. D. Pinto, Vinicius F. dos Santos and Jayme L. Szwarcfiter, Disconnected Matchings.  
 C2-3 Sun-Yuan Hsieh, Van Bang Le and Sheng-Lung Peng, On the d-Claw Vertex Deletion Problem. (Best Paper)  
 C2-4 Ankush Acharyya, Vahideh Keikha, Diptapriyo Majumdar and Supantha Pandit, Constrained Hitting Set Problem with Intervals.  
 C2-5 Sen Huang, Mingyu Xiao and Xiaoyu Chen, Exact algorithms for maximum weighted independent set on sparse graphs.

# 2021.10.26 (Tue.)

|             |   |      |      |
|-------------|---|------|------|
| 09:00-09:30 | Registration  |      |      |
| 09:30-10:00 | A3-1  | B3-1 | C3-1 |
| 10:00-10:25 | A3-2  | B3-2 | C3-2 |
| 10:25-10:50 | A3-3  | B3-3 | C3-3 |
| 10:50-11:15 | A3-4  | B3-4 | C3-4 |
| 11:15-11:40 | A3-5  |      | C3-5 |
| 11:40-13:00 | Lunch   |      |      |
| 13:00-14:00 | Keynote Speech #3 Prof. Tony Q.S. Quek<br>(Singapore University of Technology and Design, Singapore)<br>Session Chair: Prof. Ling-Ju Hung |      |      |

|             |  |      |      |
|-------------|--|------|------|
| 14:00-15:00 | Keynote Speech #4 Prof. Ralf Klasing<br>(CNRS and University of Bordeaux, France)<br>Session Chair: Prof. Ling-Ju Hung |      |      |
| 15:00-15:05 | Best Paper Award Ceremony<br>Session Chair: Prof. Ralf Klasing   |      |      |
| 15:05-15:15 | Coffee/Tea Break   |      |      |
| 15:15-15:45 | A4-1   | B4-1 | C4-1 |
| 15:45-16:10 | A4-2   | B4-2 | C4-2 |
| 16:10-16:35 | A4-3   | B4-3 | C4-3 |
| 16:35-17:00 | A4-4   | B4-4 | C4-4 |
| 17:00-17:20 | COCOON 2022<br>Session Chair: Prof. Ling-Ju Hung   |      |      |

## Session A3: Approximation Algorithms & Graph

### Algorithms

Session Chair: Jou-Ming Chang

- A3-1 Arindam Biswas and Venkatesh Raman, Sublinear-Space Approximation Algorithms for Max r-SAT.
- A3-2 Jingyang Zhao and Mingyu Xiao, A Further Improvement on Approximating TTP-2.
- A3-3 Jan Goedgebeur, Shenwei Huang, Yiao Ju and Owen Merkel, Colouring graphs with no induced six-vertex path or diamond.
- A3-4 Yu-Han Chen, Kung-Jui Pai, Hsin-Jung Lin and Jou-Ming Chang, Constructing Tri-CISTs in Shuffle-Cubes.
- A3-5 Takehiro Ito, Yuni Iwamasa, Yasuaki Kobayashi, Yu Nakahata, Yota Otachi and Kunihiro Wasa, Reconfiguring Directed Trees in a Digraph.

## Session B3: Graph Algorithms

Session Chair: Sheng-Lung Peng

- B3-1 Yusuke Yanagisawa, Yuma Tamura, Akira Suzuki and Xiao Zhou, Decremental Optimization of Vertex-Coloring Under the Reconfiguration Framework.
- B3-2 Kung-Jui Pai, Embedding Three Edge-disjoint Hamiltonian Cycles into Locally Twisted Cubes.
- B3-3 Luerbio Faria and Uéverton Souza, On the Probe Problem for  $(r,l)$ -Well-Coveredness.
- B3-4 Nina Klobas and Matjaž Krnc, Distinguishing graphs via cycles.

## Session C3: Graph Theory and Applications

Session Chair: Chi-Yeh Chen

- C3-1 Ruo-Wei Hung and Ming-Jung Chiu, The Restrained Domination and Independent Restrained Domination in Extending Supergrid Graphs.
- C3-2 Alan Frieze, Krzysztof Turowski and Wojciech Szpankowski, The Concentration of the Maximum Degree in the Duplication-Divergence Models.
- C3-3 Sambhav Gupta, Eddie Cheng and László Lipták, Conditional Fractional Matching Preclusion for Burnt Pancake Graphs and Pancake-Like Graphs.
- C3-4 Justie Su-Tzu Juan and Zong-You Lai, The Weakly Dimension-balanced Pancyclicity on Toroidal Mesh Graph  $T_{m,n}$  when Both  $m$  and  $n$  Are Odd.
- C3-5 Maciej Skorski, Hypercontractivity via Tensor Calculus.

## Session A4: Fault Tolerant Computing and Fault

### Diagnosis

Session Chair: Chia-Wei Lee

- A4-1 Yihong Wang, Shuming Zhou and Zhengqin Yu, Reliability Evaluation of Subsystem Based on Exchanged Hypercube.
- A4-2 Jiafei Liu, Shuming Zhou, Qianru Zhou and Zhengqin Yu, Fault diagnosability of regular networks under the Hybrid PMC model.
- A4-3 Nai-Wen Chang, Hsuan-Jung Wu and Sun-Yuan Hsieh, A Study for Conditional Diagnosability of Pancake Graphs.
- A4-4 Meirun Chen, D. Frank Hsu and Cheng-Kuan Lin, A new measure for locally t-diagnosable under PMC model.

## Session B4: Network and Algorithms

Session Chair: Ling-Ju Hung

- B4-1 Neelima Gupta, Sapna Grover and Rajni Dabas, Respecting Lower Bounds in Uniform Lower and Upper Bounded Facility Location Problem.
- B4-2 Wei Ding, Finding Cheapest Deadline Paths.
- B4-3 Lu Han, Chenchen Wu and Yicheng Xu, Approximate the Lower-Bounded Connected Facility Location Problem.
- B4-4 Longteng Duan, Zifan Gong, Minming Li, Chenhao Wang and Xiaoying Wu, Mechanism Design for Facility Location with Fractional Preferences and Minimum Distance.

## Session C4: Automata

Session Chair: Tomoyuki Yamakami

- C4-1 Tomoyuki Yamakami, Between SC and LOGDCFL: Families of Languages Accepted by Polynomial-Time Logarithmic-Space Deterministic Auxiliary Depth-k Storage Automata.
- C4-2 Sammy Khalife, Yann Ponty and Laurent Bulteau, Sequence graphs realizations and ambiguity in language models.
- C4-3 Stefan Hoffmann, Ideal Separation and General Theorems for Constrained Synchronization and their Application to Small Constraint Automata.
- C4-4 Hyunjoon Cheon, Joonghyuk Hahn, Yo-Sub Han and Sang-Ki Ko, Most Pseudo-copy Languages Are Not Context-free.

© 2021 COCOON 2021.

E-mail: [cocoon2021@ncku.edu.tw](mailto:cocoon2021@ncku.edu.tw)

Conference Proceedings (<https://link.springer.com/book/10.1007/978-3-030-89543-3>)

Visitor:  網頁計數器 (<https://www.mfwzjsq.com/>)