

## A List of Publications

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November 28, 2015

### • Books, Journal Issues, and Conference Proceedings

- [1] M. Y. Kao, editor. *Encyclopedia of Algorithms*. Springer, 2nd edition, 2015. To appear.
- [2] M. Y. Kao, editor. *Encyclopedia of Algorithms*. Springer, 1st edition, 2008.
- [3] M. Y. Kao and X. Y. Li, editors. *Proceedings of the 3rd Annual International Conference on Algorithmic Aspects in Information and Management*, volume 4508 of *Lecture Notes in Computer Science*, Portland, Oregon, USA, June 2007. Springer-Verlag.
- [4] J. K. Hwang, C. T. Sun, W. L. Hsu, and M. Y. Kao, editors. *Special Issue on Bioinformatics*. *Journal of Information Science and Engineering*, 19(6), 2003.
- [5] W. L. Hsu and M. Y. Kao, editors. *Special Issue for the 4th Annual International Computing and Combinatorics Conference*. *Theoretical Computer Science*, 261(2), 2001.
- [6] D. Gusfield and M. Y. Kao, editors. *Special Issue on Computational Biology*. *Algorithmica*, 25(2/3), October/November 1999.
- [7] M. Y. Kao, A. S. Kyle, and P. Lakner, editors. *Special Issue on Computational Finance*. *Algorithmica*, 25(1), September 1999.
- [8] W. L. Hsu and M. Y. Kao, editors. *Proceedings of the 4th Annual International Computing and Combinatorics Conference*, volume 1449 of *Lecture Notes in Computer Science*, Taipei, Taiwan, Republic of China, August 1998. Springer-Verlag.

### • Conference Invited Talks and Book Chapters

- [9] B. DasGupta, M. Y. Kao, and I. Mandoiu. Algorithmic issues in DNA barcoding problems. In M. Elloumi and A. Y. Zomaya, editors, *Algorithms in Computational Molecular Biology: Techniques, Approaches and Applications (Wiley Series in Bioinformatics)*, chapter 7, pages 129–142. Wiley Interscience, Hoboken, NJ, 2011.
- [10] B. DasGupta and M. Y. Kao. Efficient combinatorial algorithms for DNA sequence processing. In I. Mandoiu and A. Zelikovsky, editors, *Bioinformatics Algorithms: Techniques and Applications*, pages 223–239. Wiley Interscience, Hoboken, NJ, 2008.

- [11] M. Y. Kao. Algorithmic DNA self-assembly. In S.-W. Cheng and C. K. Poon, editors, *Lecture Notes in Computer Science 4041: Proceedings of the 2nd International Conference on Algorithmic Aspects in Information and Management*, page 10. Springer-Verlag, New York, NY, 2006.
- [12] K. Akcoglu, J. Aspnes, B. DasGupta, and M. Y. Kao. Opportunity cost algorithms for combinatorial auctions. In E. J. Kontoghiorghes, B. Rustem, and S. Siokos, editors, *Applied Optimization 74: Computational Methods in Decision-Making, Economics and Finance*, pages 455–479. Kluwer Academic Publishers, Dordrecht, 2002.
- [13] M. Y. Kao, A. Nolte, and S. R. Tate. The risk profile problem for stock portfolio optimization. In E. J. Kontoghiorghes, B. Rustem, and S. Siokos, editors, *Applied Optimization 74: Computational Methods in Decision-Making, Economics and Finance*, pages 213–230. Kluwer Academic Publishers, Dordrecht, 2002.

• **Journal Publications**

- [14] C. J. Wang and M. Y. Kao. Optimal search for parameters in Monte Carlo simulation for derivative pricing. *European Journal of Operational Research*, 2016. To appear.
- [15] A. C. Johnsen, M. Y. Kao, and S. Seki. A manually-checkable proof for the np-hardness of 11-color pattern self-assembly tile set synthesis. *Journal of Combinatorial Optimization*, 2016. To appear.
- [16] Y. C. Tsai, C. L. Lei, J. M. Ho, M. Y. Kao, and S. L. Liao. Outstanding principal as prepayment value: A closed-form formula for mortgage pricing. *Journal of Information Science and Engineering*, 31(3):925–942, 2015.
- [17] B. Chen, W. W. Y. Hsu, J. M. Ho, and M. Y. Kao. Linear-time accurate lattice algorithms for tail conditional expectation. *Algorithmic Finance*, 3(1-2):87–140, 2014.
- [18] M. Y. Kao, H. C. M. Leung, H. Sun, and Y. Zhang. Deterministic polynomial-time algorithms for designing short DNA words. *Theoretical Computer Science*, 494:144–160, 2013.
- [19] B. Fu, M. Y. Kao, and L. Wang. Discovering almost any hidden motif from multiple sequences. *ACM Transactions on Algorithms*, 7(2), 2011. Article 26, 18 pages.
- [20] H. W. Wei, W. C. Lu, P. C. Huang, W. K. Shih, and M. Y. Kao. Testing whether a set of code words satisfies a given set of constraints. *Journal of Information Science and Engineering*, 26(2):333–346, 2010.
- [21] B. Fu, M. Y. Kao, and L. Wang. Probabilistic analysis of a motif discovery algorithm for multiple sequences. *SIAM Journal on Discrete Mathematics*, 23:1715–1737, 2009.
- [22] M. Y. Kao, M. Sanghi, and R. Schweller. Randomized fast design of short DNA words. *ACM Transactions on Algorithms*, 5(4), October 2009. Article 43, 24 pages.
- [23] M. Y. Chan, W. T. Chan, F. Y. L. Chin, S. P. Y. Fung, and M. Y. Kao. Linear-time haplotype inference on pedigrees without recombinations and mating loops. *SIAM Journal on Computing*, 38(6):2179–2197, 2009.

- [24] M. Y. Kao and M. Sanghi. An approximation algorithm for a bottleneck traveling salesman problem. *Journal of Discrete Algorithms*, 7(3):315–326, 2009.
- [25] M. Ashley, T. Berger-Wolf, P. Berman, W. Chaovalitwongse, B. DasGupta, and M. Y. Kao. On approximating four covering and packing problems. *Journal of Computer and System Sciences*, 75(5):287–302, 2009.
- [26] G. Wu, M. Y. Kao, G. Lin, and J.-H. You. Reconstructing phylogenies from noisy quartets in polynomial time with a high success probability. *Algorithms for Molecular Biology*, 3(1):doi:10.1186/1748-7188-3-1, 2008.
- [27] R. Schweller, Z. C. Li, Y. Chen, Y. Gao, A. Gupta, Y. Zhang, P. Dinda, M. Y. Kao, and G. Memik. Reversible sketches: Enabling monitoring and analysis over high-speed data streams. *IEEE/ACM Transactions on Networking*, 15(5):1059–1072, 2007.
- [28] P. Berman, B. DasGupta, M. Y. Kao, and J. Wang. On constructing an optimal consensus clustering from multiple clusterings. *Information Processing Letters*, 104(4):137–145, 2007.
- [29] M. Y. Kao, X. Y. Li, and W. Wang. Average case analysis for tree labelling schemes. *Theoretical Computer Science*, 378(3):271–291, 2007.
- [30] P. Bertone, V. Trifonov, J. S. Rozowsky, F. Schubert, O. Emanuelsson, J. Karro, M. Y. Kao, M. Snyder, and M. Gerstein. Design optimization methods for genomic DNA tiling arrays. *Genome Research*, 16(2):271–281, 2006.
- [31] T.-s. Hsu and M. Y. Kao. Optimal augmentation for bipartite componentwise biconnectivity in linear time. *SIAM Journal on Discrete Mathematics*, 19(2):345–362, 2005.
- [32] P. Berman, B. DasGupta, and M. Y. Kao. Tight approximability results for test set problems in bioinformatics. *Journal of Computer and System Sciences*, 71(2):145–162, 2005.
- [33] G. Aggarwal, Q. Cheng, M. H. Goldwasser, M. Y. Kao, P. Moisset de Espanés, and R. T. Schweller. Complexities for generalized models of self-assembly. *SIAM Journal on Computing*, 34(6):1493–1515, 2005.
- [34] M. H. Goldwasser, M. Y. Kao, and H. I. Lu. Linear-time algorithms for computing maximum-density sequence segments with bioinformatics applications. *Journal of Computer and System Sciences*, 70(2):128–144, 2005.
- [35] K. Akcoglu, P. Drineas, and M. Y. Kao. Fast universalization of investment strategies. *SIAM Journal on Computing*, 34(1):1–22, 2004.
- [36] W. K. Hon, T. W. Lam, S. M. Yiu, M. Y. Kao, and W. K. Sung. Subtree transfer distance for degree- $d$  phylogenies. *International Journal of Foundations of Computer Science*, 15(6):893–909, 2004.
- [37] P. Berman, P. Bertone, B. DasGupta, M. Gerstein, M. Y. Kao, and M. Snyder. Fast optimal genome tiling with applications to microarray designs and database searches. *Journal of Computational Biology*, 11(4):766–785, 2004.
- [38] W. K. Hon, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. Non-shared edges and nearest neighbor interchanges revisited. *Information Processing Letters*, 91(3):129–134, 2004.

- [39] S. Jeong, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. Predicting RNA secondary structures with arbitrary pseudoknots by maximizing the number of stacking pairs. *Journal of Computational Biology*, 10(6):981–995, 2003.
- [40] Z. Z. Chen, X. He, and M. Y. Kao. Common-face embeddings of planar graphs. *SIAM Journal on Computing*, 32(2):408–434, 2003.
- [41] M. Y. Kao, J. Samet, and W. K. Sung. The enhanced double digest problem for DNA physical mapping. *Journal of Combinatorial Optimization*, 7(1):69–78, 2003.
- [42] J. Aspnes, J. Hartling, M. Y. Kao, J. Kim, and G. Shah. A combinatorial toolbox for protein sequence design and landscape analysis in the Grand Canonical model. *Journal of Computational Biology*, 9(5):721–742, 2002.
- [43] T. Chen, M. Y. Kao, M. Tepel, J. Rush, and G. M. Church. A dynamic programming approach to de novo peptide sequencing via tandem mass spectrometry. *Journal of Computational Biology*, 8(3):325–337, 2001.
- [44] M. Y. Kao and S. R. Tate. Designing proxies for stock market indices is computationally hard. *Quantitative Finance*, 1(3):361–371, 2001.
- [45] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. An even faster and more unifying algorithm for comparing trees via unbalanced bipartite matchings. *Journal of Algorithms*, 40:212–233, 2001.
- [46] M. Csűrös and M. Y. Kao. Provably fast and accurate recovery of evolutionary trees through harmonic greedy triplets. *SIAM Journal on Computing*, 31(1):306–322, 2001.
- [47] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. A decomposition theorem for maximum weight bipartite matchings. *SIAM Journal on Computing*, 31(1):18–26, 2001.
- [48] G. H. Chen, M. Y. Kao, Y. D. Lyuu, and H. K. Wong. Optimal buy-and-hold strategies for financial markets with bounded daily returns. *SIAM Journal on Computing*, 31(2):447–459, 2001.
- [49] M. Y. Kao and J. Wang. Minimizing roundoff errors of prefix sums via dynamic construction of Huffman trees. *Theoretical Computer Science*, 262(1-2):101–115, 2001.
- [50] X. He, M. Y. Kao, and H. I. Lu. A fast general methodology for information-theoretically optimal encodings of graphs. *SIAM Journal on Computing*, 30(3):838–846, 2000.
- [51] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. Cavity matchings, label compressions, and unrooted evolutionary trees. *SIAM Journal on Computing*, 30(2):602–624, 2000.
- [52] Z. Z. Chen and M. Y. Kao. Reducing randomness via irrational numbers. *SIAM Journal on Computing*, 29(4):1247–1256, 2000.
- [53] M. Y. Kao and J. Wang. Linear-time approximation algorithms for computing numerical summation with provably small errors. *SIAM Journal on Computing*, 29(5):1568–1576, 2000.
- [54] X. He, M. Y. Kao, and H. I. Lu. Linear-time succinct encodings of planar graphs via canonical orderings. *SIAM Journal on Discrete Mathematics*, 12(3):317–325, 1999.

- [55] M. Y. Kao and S. R. Tate. On-line difference maximization. *SIAM Journal on Discrete Mathematics*, 12(1):78–90, 1999.
- [56] M. Y. Kao, N. Occhiogrosso, and S. H. Teng. Simple and efficient compression schemes for dense and complement graphs. *Journal of Combinatorial Optimization*, 2(4):351–359, 1999.
- [57] M. Y. Kao, J. F. Qi, and L. Tan. Optimal bidding algorithms against cheating in multiple object auctions. *SIAM Journal on Computing*, 28(3):955–969, 1999.
- [58] T.-s. Hsu and M. Y. Kao. A unifying augmentation algorithm for two-edge connectivity and biconnectivity. *Journal of Combinatorial Optimization*, 2(3):237–256, 1998.
- [59] M. Y. Kao, Y. Ma, M. Sipser, and Y. Yin. Optimal constructions of hybrid algorithms. *Journal of Algorithms*, 29:142–164, 1998.
- [60] C. T. Ho and M. Y. Kao. Efficient submesh operations in wormhole-routed meshes. *Information Sciences*, 107:1–13, 1998.
- [61] M. Y. Kao. Tree contractions and evolutionary trees. *SIAM Journal on Computing*, 27(6):1592–1616, December 1998.
- [62] A. Feldmann, M. Y. Kao, J. Sgall, and S. H. Teng. Optimal online scheduling of parallel jobs with dependencies. *Journal of Combinatorial Optimization*, 1:393–411, 1998.
- [63] M. Y. Kao. Efficient detection and protection of information in cross tabulated tables II: Minimal linear invariants. *Journal of Combinatorial Optimization*, 1:187–202, 1997.
- [64] M. Y. Kao. Total protection of analytic-invariant information in cross-tabulated tables. *SIAM Journal on Computing*, 26(1):231–242, February 1997.
- [65] M. Y. Kao, J. H. Reif, and S. R. Tate. Searching in an unknown environment: An optimal randomized algorithm for the cow-path problem. *Information and Computation*, 131(1):63–80, 1997.
- [66] M. Y. Kao. Data security equals graph connectivity. *SIAM Journal on Discrete Mathematics*, 9:87–100, 1996.
- [67] M. Y. Kao, S. H. Teng, and K. Toyama. An optimal parallel algorithm for planar cycle separators. *Algorithmica*, 14:398–408, 1995.
- [68] C. T. Ho and M. Y. Kao. Efficient broadcast on hypercubes with wormhole and E-cube routings. *Parallel Processing Letters*, 5(2):213–222, 1995.
- [69] M. Y. Kao. Linear-time optimal augmentation for componentwise bipartite-completeness of graphs. *Information Processing Letters*, pages 59–63, 1995.
- [70] M. Y. Kao. Planar strong connectivity helps in parallel depth-first search. *SIAM Journal on Computing*, 24(1):46–62, 1995.
- [71] C. T. Ho and M. Y. Kao. Optimal broadcast in all-port wormhole-routed hypercubes. *IEEE Transactions on Parallel and Distributed Systems*, pages 200–204, 1995.

- [72] M. Y. Kao, M. Fürer, X. He, and B. Raghavachari. Optimal parallel algorithms for straight-line grid embeddings of planar graphs. *SIAM Journal on Discrete Mathematics*, 7(4):632–646, 1994.
- [73] M. Y. Kao and D. Gusfield. Efficient detection and protection of information in cross tabulated tables I: Linear invariant test. *SIAM Journal on Discrete Mathematics*, 6:460–476, 1993.
- [74] M. Y. Kao and P. N. Klein. Towards overcoming the transitive-closure bottleneck: Efficient parallel algorithms for planar digraphs. *Journal of Computer and System Sciences*, 47:459–500, 1993.
- [75] M. Y. Kao. Linear-processor NC algorithms for planar directed graphs I: Strongly connected components. *SIAM Journal on Computing*, 22(3):431–459, 1993.
- [76] M. Y. Kao and G. E. Shannon. Linear-processor NC algorithms for planar directed graphs II: Directed spanning trees. *SIAM Journal on Computing*, 22(3):460–481, 1993.
- [77] J. Cheriyan, M. Y. Kao, and R. Thurimella. Scan-first search and sparse certificates: An improved parallel algorithm for  $k$ -vertex connectivity. *SIAM Journal on Computing*, 22(1):157–174, 1993.
- [78] M. Y. Kao and F. Wan. Not all planar digraphs have small cycle separators. *Information Processing Letters*, 44:79–83, 1992.
- [79] M. Y. Kao and S. R. Tate. Online matching with blocked input. *Information Processing Letters*, 38:113–116, 1991.
- [80] A. Aggarwal, R. J. Anderson, and M. Y. Kao. Parallel depth-first search in general directed graphs. *SIAM Journal on Computing*, 19:397–409, 1990.

• **Refereed Conference Publications**

- [81] C. J. Wang and M. Y. Kao. Optimal search for parameters in Monte Carlo simulation for derivative pricing. In *Proceedings of the 2014 IEEE Conference on Computational Intelligence for Financial Engineering and Economics (CIFEr)*, pages 384–390, 2014.
- [82] A. C. Johnsen, M. Y. Kao, and S. Seki. Computing minimum tile sets to self-assemble color patterns. In L. Cai, S.-W. Cheng, and T.-W. Lam, editors, *Lecture Notes in Computer Science: Proceedings of the 24th Annual International Symposium on Algorithms and Computation*, pages 699–710. Springer-Verlag, New York, NY, 2013.
- [83] W. W. Y. Hsu, C. Y. Lu, M. Y. Kao, and J. M. Ho. Optimum quantizing of monotonic non-decreasing arrays. In *Proceedings of the 2013 IEEE Conference on Computational Intelligence for Financial Engineering and Economics (CIFEr)*, pages 95–101, 2013.
- [84] H.-T. Peng, C.-F. Chang, S.-L. Liao, M. Y. Kao, F. Lai, and J.-M. Ho. The development of a real-time valuation service of financial derivatives. In *Proceedings of the 2012 IEEE Conference on Computational Intelligence for Financial Engineering and Economics (CIFEr)*, pages 228–235, 2012.

- [85] Y.-C. Tsai, Z.-H. Chen, J.-M. Ho, M. Y. Kao, C.-L. Lei, and S.-L. Liao. Closed-form mortgage pricing formula with outstanding principal as prepayment value. In *Proceedings of the 2012 IEEE Conference on Computational Intelligence for Financial Engineering and Economics (CIFER)*, pages 100–106, 2012.
- [86] W. W. Y. Hsu, C.-Y. Lu, M. Y. Kao, Y.-D. Lyuu, and J.-M. Ho. Pricing discrete Asian barrier options on lattices. In *Proceedings of the 2012 IEEE Conference on Computational Intelligence for Financial Engineering and Economics (CIFER)*, pages 85–92, 2012.
- [87] H.-L. Chen and M. Y. Kao. Optimizing tile concentrations to minimize errors and time for DNA tile self-assembly systems. In *Proceedings of the 16th International Conference on DNA Computing and Molecular Programming*, pages 13–24, 2010.
- [88] M. Y. Kao, H. C. M. Leung, H. Sun, and Y. Zhang. Deterministic polynomial-time algorithms for designing short DNA words. In J. Kratochvil and A. Li, editors, *Lecture Notes in Computer Science 6108: Proceedings of the 7th Annual Conference on Theory and Applications of Models of Computation*, pages 308–319. Springer-Verlag, New York, NY, 2010.
- [89] P. C. Huang, H. W. Wei, Y. C. Chen, M. Y. Kao, W. K. Shih, and T. S. Hsu. Two-vertex connectivity augmentations for graphs with a partition constraint. In Y. Dong, D. Z. Du, and O. Ibarra, editors, *Lecture Notes in Computer Science 5878: Proceedings of the 20th Annual International Symposium on Algorithms and Computation*, pages 1195–1204. Springer-Verlag, New York, NY, 2009.
- [90] B. Chen, W. W.Y. Hsu, and M. Y. Kao. Fast accurate algorithms for tail conditional expectation. In *Numerical Analysis and Applied Mathematics: International Conference on Numerical Analysis and Applied Mathematics 2009: Volume 1 and Volume 2. AIP Conference Proceedings*, volume 1168, pages 501–504, 2009.
- [91] K. Min, M. Y. Kao, and H. Zhu. The closest pair problem under the Hamming metric. In H. Q. Ngo, editor, *Lecture Notes in Computer Science 5609: Proceedings of the 15th Annual International Computing and Combinatorics Conference*, pages 205–214. Springer-Verlag, New York, NY, 2009.
- [92] Y. C. Tsai, H. T. Peng, J. M. Ho, B. Chen, and M. Y. Kao. Speeding up two-level simulation for tail conditional expectations by means of prefix sum based algorithms. In *Proceedings of the International MultiConference of Engineers and Computer Scientists 2009*, pages 1400–1405, 2009.
- [93] B. Fu, M. Y. Kao, and L. Wang. Discovering almost any hidden motif from multiple sequences in polynomial time with low sample complexity and high success probability. In J. Chen and S. B. Cooper, editors, *Lecture Notes in Computer Science 5532: Proceedings of the 6th Annual Conference on Theory and Applications of Models of Computation*, pages 231–240. Springer-Verlag, New York, NY, 2009.
- [94] M. Y. Kao and R. T. Schweller. Randomized self-assembly for approximate shapes. In L. Aceto, I. Damgård, L. A. Goldberg, M. M. Halldórsson, A. Ingólfssdóttir, and I. Walukiewicz, editors, *Lecture Notes in Computer Science 5125: Proceedings of the 35th International Colloquium on Automata, Languages, and Programming*, pages 370–384. Springer-Verlag, New York, NY, 2008.

- [95] B. Fu, M. Y. Kao, and L. Wang. Efficient algorithms for model-based motif discovery from multiple sequences. In M. Agrawal, D. Du, Z. Duan, and A. Li, editors, *Lecture Notes in Computer Science 4978: Proceedings of the 5th Annual Conference on Theory and Applications of Models of Computation*, pages 234–245. Springer-Verlag, New York, NY, 2008.
- [96] H. W. Wei, W. C. Lu, P. C. Huang, W. K. Shih, and M. Y. Kao. Testing whether a set of code words satisfies a given set of constraints. In *Proceedings of National Computer Symposium, Taiwan*, pages 580–591, 2007.
- [97] C. C. Huang, M. Y. Kao, X. Y. Li, and W. Wang. Using Nash implementation to achieve better frugality ratios. In T. Tokuyama, editor, *Lecture Notes in Computer Science 4835: Proceedings of the 18th Annual International Symposium on Algorithms and Computation*, pages 377–389. Springer-Verlag, New York, NY, 2007.
- [98] Y. Gao, Y. Zhao, R. Schweller, S. Venkataraman, Y. Chen, D. Song, and M. Y. Kao. Detecting stealthy spreaders using online outdegree histograms. In *Proceedings of the 15th IEEE International Workshop on Quality of Service*, pages 145–153, 2007.
- [99] K. F. Aoki-Kinoshita, M. Kanehisa, M. Y. Kao, X. Y. Li, and W. Wang. A 6-approximation algorithm for computing the smallest common AoN-supertree with application to the reconstruction of glycan trees. In T. Asano, editor, *Lecture Notes in Computer Science 4288: Proceedings of the 17th Annual International Symposium on Algorithms and Computation*, pages 100–110. Springer-Verlag, New York, NY, 2006.
- [100] M. Y. Kao, M. Sanghi, and R. Schweller. Flexible word design and graph labeling. In T. Asano, editor, *Lecture Notes in Computer Science 4288: Proceedings of the 17th Annual International Symposium on Algorithms and Computation*, pages 48–60. Springer-Verlag, New York, NY, 2006.
- [101] M. Y. Chan, W. T. Chan, F. Y. L. Chin, S. P. Y. Fung, and M. Y. Kao. Linear-time haplotype inference on pedigrees without recombinations. In P. B ucher and B. M. E. Moret, editors, *Lecture Notes in Computer Science: Proceedings of the 6th Workshop on Algorithms in Bioinformatics*, pages 56–67. Springer-Verlag, New York, NY, 2006.
- [102] M. Y. Kao and M. Sanghi. An approximation algorithm for a bottleneck traveling salesman problem. In G. F. Italiano, editor, *Lecture Notes in Computer Science 3998: Proceedings of the 6th Italian Conference on Algorithms and Complexity*, pages 223–235. Springer-Verlag, New York, NY, 2006.
- [103] Z. C. Li, M. Sanghi, Y. Chen, M. Y. Kao, and B. Chavez. Hamsa: Fast signature generation for zero-day polymorphic worms with provable attack resilience. In *Proceedings of the 2006 IEEE Symposium on Security and Privacy*, pages 32–47, 2006.
- [104] R. Schweller, Z. C. Li, Y. Chen, Y. Gao, A. Gupta, Y. Zhang, P. Dinda, M. Y. Kao, and G. Memik. Reverse hashing for high-speed network monitoring: Algorithms, evaluation, and applications. In *Proceedings of the 25th Annual Joint Conference of the IEEE Computer and Communications Societies*, pages 1397–1408, 2006.
- [105] M. Y. Kao and R. Schweller. Reducing tile complexity for self-assembly through temperature programming. In *Proceedings of the 17th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 471–480, 2006.



- [106] M. Y. Kao, X. Y. Li, and W. Wang. Average case analysis for tree labelling schemes. In X. Deng and D. Du, editors, *Lecture Notes in Computer Science 3827: Proceedings of the 16th Annual International Symposium on Algorithms and Computation*, pages 136–145. Springer-Verlag, New York, NY, 2005.
- [107] M. Y. Kao, M. Sanghi, and R. Schweller. Randomized fast design of short DNA words. In G. F. Italiano, C. Palamidessi, and M. Yung, editors, *Lecture Notes in Computer Science 3580: Proceedings of the 32nd International Colloquium on Automata, Languages, and Programming*, pages 1275–1286. Springer-Verlag, New York, NY, 2005.
- [108] M. Y. Kao, X. Y. Li, and W. Wang. Towards truthful mechanisms for binary demand games: A general framework. In *Proceedings of the 6th ACM Conference on Electronic Commerce*, pages 213–222, 2005.
- [109] P. Berman, B. DasGupta, and M. Y. Kao. Tight approximability results for test set problems in bioinformatics. In T. Hagerup and J. Katajainen, editors, *Lecture Notes in Computer Science 3111: Proceedings of the 9th Scandinavian Workshop on Algorithm Theory*, pages 39–50, 2004.
- [110] G. Aggarwal, M. H. Goldwasser, M. Y. Kao, and R. T. Schweller. Complexities for generalized models of self-assembly. In *Proceedings of the 15th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 880–889, 2004.
- [111] P. Berman, P. Bertone, B. DasGupta, M. Gerstein, M. Y. Kao, and M. Snyder. Fast optimal genome tiling with applications to microarray designs and database searches. In R. Guigo and D. Gusfield, editors, *Lecture Notes in Computer Science 2452: Proceedings of the 2nd Workshop on Algorithms in Bioinformatics*, pages 419–433. Springer-Verlag, New York, NY, 2002.
- [112] M. H. Goldwasser, M. Y. Kao, and H. I. Lu. Fast algorithms for finding maximum-density segments of a sequence with applications to bioinformatics. In R. Guigo and D. Gusfield, editors, *Lecture Notes in Computer Science 2452: Proceedings of the 2nd Workshop on Algorithms in Bioinformatics*, pages 157–171. Springer-Verlag, New York, NY, 2002.
- [113] K. Akcoglu, P. Drineas, and M. Y. Kao. Fast universalization of investment strategies with provably good relative returns. In P. Widmayer, F. T. Ruiz, R. Morales, M. Hennessy, S. Eidenbenz, and R. Conejo, editors, *Lecture Notes in Computer Science 2380: Proceedings of the 29th International Colloquium on Automata, Languages, and Programming*, pages 888–900. Springer-Verlag, New York, NY, 2002.
- [114] S. Jeong, M. Y. Kao, T. W. Lam, W. K. Sung, and S. M. Yiu. Predicting RNA secondary structures with arbitrary pseudoknots by maximizing the number of stacking pairs. In *Proceedings of the 2nd IEEE International Symposium on Bio-Informatics and Biomedical Engineering*, pages 183–190, 2001.
- [115] M. Y. Kao and V. Ramachandran. DNA self-assembly for constructing 3D boxes. In P. Eades and T. Takaoka, editors, *Lecture Notes in Computer Science 2223: Proceedings of the 12th Annual International Symposium on Algorithms and Computation*, pages 429–440. Springer-Verlag, New York, NY, 2001.
- [116] J. Aspnes, J. Hartling, M. Y. Kao, J. Kim, and G. Shah. A combinatorial toolbox for protein sequence design and landscape analysis in the Grand Canonical model. In P. Eades and

- T. Takaoka, editors, *Lecture Notes in Computer Science 2223: Proceedings of the 12th Annual International Symposium on Algorithms and Computation*, pages 403–415. Springer-Verlag, New York, NY, 2001.
- [117] K. Akcoglu, M. Y. Kao, and S. V. Raghavan. Fast pricing of European Asian options with provable accuracy: Single-stock and basket options. In Friedhelm Meyer auf der Heide, editor, *Lecture Notes in Computer Science 2161: Proceedings of the 9th Annual European Symposium on Algorithms*, pages 404–415. Springer-Verlag, New York, NY, 2001.
- [118] J. Aspnes, D. F. Fischer, M. J. Fischer, M. Y. Kao, and A. Kumar. Towards understanding the predictability of stock markets from the perspective of computational complexity. In *Proceedings of the 12th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 745–754, 2001.
- [119] Y. Chen, M. Y. Kao, and H. I. Lu. Optimal bid sequences for multiple-object auctions with unequal budgets. In D. T. Lee and S. H. Teng, editors, *Lecture Notes in Computer Science 1969: Proceedings of the 11th Annual International Symposium on Algorithms and Computation*, pages 84–95. Springer-Verlag, New York, NY, 2000.
- [120] W. K. Hon, M. Y. Kao, and T. W. Lam. Improved phylogeny comparisons: Non-shared edges, nearest neighbor interchanges, and subtree transfers. In D. T. Lee and S. H. Teng, editors, *Lecture Notes in Computer Science 1969: Proceedings of the 11th Annual International Symposium on Algorithms and Computation*, pages 527–538. Springer-Verlag, New York, NY, 2000.
- [121] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. Unbalanced and hierarchical bipartite matchings with applications to labeled tree comparisons. In D. T. Lee and S. H. Teng, editors, *Lecture Notes in Computer Science 1969: Proceedings of the 11th Annual International Symposium on Algorithms and Computation*, pages 479–490. Springer-Verlag, New York, NY, 2000.
- [122] M. Y. Kao, J. Samet, and W. K. Sung. The enhanced double digest problem for DNA physical mapping. In M. Halldórsson, editor, *Lecture Notes in Computer Science 1851: Proceedings of the 7th Scandinavian Workshop on Algorithm Theory*, pages 383–392. Springer-Verlag, New York, NY, 2000.
- [123] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. A faster and unifying algorithm for comparing trees. In R. Giancarlo and D. Sankoff, editors, *Lecture Notes in Computer Science: Proceedings of the 11th Annual Symposium on Combinatorial Pattern Matching*, pages 129–142. Springer-Verlag, New York, NY, 2000.
- [124] M. Y. Kao, A. Nolte, and S. R. Tate. The risk profile problem for stock portfolio optimization. In *Proceedings of the 32nd Annual ACM Symposium on Theory of Computing*, pages 228–234, 2000.
- [125] T. Chen, M. Y. Kao, M. Tepel, J. Rush, and G. M. Church. A dynamic programming approach to de novo peptide sequencing via tandem mass spectrometry. In *Proceedings of the 11th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 389–398, 2000.
- [126] T. Chen and M. Y. Kao. On the informational asymmetry between upper and lower bounds for ultrametric evolutionary trees. In J. Nešetřil, editor, *Lecture Notes in Computer Science*

- 1643: *Proceedings of the 7th Annual European Symposium on Algorithms*, pages 248–256. Springer-Verlag, New York, NY, 1999.
- [127] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. A decomposition theorem for maximum weight bipartite matchings with applications to evolutionary trees. In J. Nešetřil, editor, *Lecture Notes in Computer Science 1643: Proceedings of the 7th Annual European Symposium on Algorithms*, pages 438–449. Springer-Verlag, New York, NY, 1999.
- [128] X. He, M. Y. Kao, and H. I. Lu. A fast general methodology for information-theoretically optimal encodings of graphs. In J. Nešetřil, editor, *Lecture Notes in Computer Science 1643: Proceedings of the 7th Annual European Symposium on Algorithms*, pages 540–549. Springer-Verlag, New York, NY, 1999.
- [129] G. H. Chen, M. Y. Kao, Y. D. Lyuu, and H. K. Wong. Optimal buy-and-hold strategies for financial markets with bounded daily returns. In *Proceedings of the 31th Annual ACM Symposium on Theory of Computing*, pages 119–128, 1999.
- [130] M. Y. Kao, A. Lingas, and A. Östlin. Balanced randomized tree splitting with applications to evolutionary tree constructions. In C. Meinel and S. Tison, editors, *Lecture Notes in Computer Science 1563: Proceedings of the 16th International Symposium on Theoretical Aspects of Computer Science*, pages 184–196. Springer-Verlag, New York, NY, 1999.
- [131] M. Csűrös and M. Y. Kao. Recovering evolutionary trees through harmonic greedy triplets. In *Proceedings of the 10th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 261–270, 1999.
- [132] M. Y. Kao and S. R. Tate. Designing proxies for stock market indices is computationally hard. In *Proceedings of the 10th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 933–934, 1999.
- [133] Z. Z. Chen, X. He, and M. Y. Kao. Nonplanar topological inference and political-map graphs. In *Proceedings of the 10th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 195–204, 1999.
- [134] M. Y. Kao and J. Wang. Efficient minimization of numerical summation errors. In K. G. Larsen, S. Skyum, and G. Winskel, editors, *Lecture Notes in Computer Science 1443: Proceedings of the 25th International Colloquium on Automata, Languages, and Programming*, pages 375–386. Springer-Verlag, New York, NY, 1998.
- [135] R. C. N. Chuang, A. Garg, X. He, M. Y. Kao, and H. I. Lu. Compact encodings of planar graphs via canonical orderings and multiple parentheses. In K. G. Larsen, S. Skyum, and G. Winskel, editors, *Lecture Notes in Computer Science 1443: Proceedings of the 25th International Colloquium on Automata, Languages, and Programming*, pages 118–129. Springer-Verlag, New York, NY, 1998.
- [136] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. Default-sensitive preprocessing for finding maxima. In X. Lin, editor, *Australian Computer Science Communications 20: Proceedings of the 4th Australasian Theory Symposium*, pages 107–120. Springer-Verlag, New York, NY, 1998.
- [137] M. Y. Kao, D. J. Rose, and H. Shao. Griding and discretization for divergence form (semiconductor-like) PDEs. *VLSI Design*, 6:111–115, 1998. Proceedings of the 4th International Workshop on Computational Electronics.

- [138] M. Y. Kao, T. W. Lam, W. K. Sung, and H. F. Ting. All-cavity maximum matchings. In H. Imai and H. W. Leong, editors, *Lecture Notes in Computer Science 1350: Proceedings of the 8th Annual International Symposium on Algorithms and Computation*, pages 364–373. Springer-Verlag, New York, NY, 1997.
- [139] T.-s. Hsu and M. Y. Kao. Security problems for statistical databases with general cell suppressions. In D. Hansen and Y. Ioannidis, editors, *Proceedings of the 9th International Conference on Scientific and Statistical Database Management*, pages 155–164. IEEE Computer Society, Washington, DC, 1997.
- [140] M. Y. Kao, J. F. Qi, and L. Tan. Optimal bidding algorithms against cheating in multiple-object auctions. In T. Jiang and D. T. Lee, editors, *Lecture Notes in Computer Science 1276: Proceedings of the 3rd Annual International Computing and Combinatorics Conference*, pages 192–201. Springer-Verlag, New York, NY, 1997.
- [141] M. Y. Kao and M. L. Littman. Algorithms for informed cows. In S. Koenig, editor, *Working Notes of the Workshop on On-Line Search, the 14th Annual AAAI National Conference on Artificial Intelligence*, pages 55–61. AAAI, 1997.
- [142] Z. Z. Chen and M. Y. Kao. Reducing randomness via irrational numbers. In *Proceedings of the 29th Annual ACM Symposium on Theory of Computing*, pages 200–209, 1997.
- [143] M. Y. Kao, T. W. Lam, T. M. Przytycka, W. K. Sung, and H. F. Ting. General techniques for comparing unrooted evolutionary trees. In *Proceedings of the 29th Annual ACM Symposium on Theory of Computing*, pages 54–65, 1997.
- [144] M. Y. Kao. Tree contractions and evolutionary trees. In G. Bongiovanni, D. P. Bovet, and G. Di Battista, editors, *Lecture Notes in Computer Science 1203: Proceedings of the 3rd Italian Conference on Algorithms and Complexity*, pages 299–310. Springer-Verlag, New York, NY, 1997.
- [145] M. Y. Kao and S. R. Tate. On-line difference maximization. In *Proceedings of the 8th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 175–182, 1997.
- [146] M. Y. Kao. Multiple-size divide-and-conquer recurrences. In *Proceedings of the International Conference on Algorithms, the 1996 International Computer Symposium*, pages 159–161. National Sun Yat-Sen University, Kaohsiung, Taiwan, Republic of China, 1996. Reprinted in *SIGACT News*, 28(2):67–69, June 1997.
- [147] T.-s. Hsu and M. Y. Kao. Optimal augmentation for bipartite componentwise biconnectivity in linear time. In T. Asano, Y. Igarashi, H. Nagamochi, S. Miyano, and S. Suri, editors, *Lecture Notes in Computer Science 1178: Proceedings of the 7th Annual International Symposium on Algorithms and Computation*, pages 213–222. Springer-Verlag, New York, NY, 1996.
- [148] T.-s. Hsu and M. Y. Kao. Optimal bi-level augmentation for selectively enhancing graph connectivity with applications. In J. Y. Cai and C. K. Wong, editors, *Lecture Notes in Computer Science 1090: Proceedings of the 2nd Annual International Computing and Combinatorics Conference*, pages 169–178. Springer-Verlag, New York, NY, 1996.
- [149] M. Y. Kao. Minimal linear invariants. In K. Kanchanasut and J. J. Levy, editors, *Lecture Notes in Computer Science 1023: Proceedings of the 1995 Asian Computing Science Conference*, pages 23–33. Springer-Verlag, New York, NY, 1995.

- [150] B. Awerbuch, Y. Azar, E. F. Grove, M. Y. Kao, P. Krishnan, and J. S. Vitter. Load balancing in the  $L_p$  norm. In *Proceedings of the 36th Annual IEEE Symposium on Foundations of Computer Science*, pages 383–391, 1995.
- [151] E. F. Grove, M. Y. Kao, P. Krishnan, and J. S. Vitter. Online perfect matching and mobile computing. In S. G. Akl, editor, *Lecture Notes in Computer Science 955: Proceedings of the 4th International Workshop on Algorithms and Data Structures*, pages 194–205. Springer-Verlag, New York, NY, 1995.
- [152] M. Y. Kao. Data security equals graph connectivity. In Y. Su, editor, *Proceedings of the 2nd International Workshop on Discrete Mathematics and Algorithms*, pages 134–147. Jinan University Press, 1994.
- [153] C. T. Ho and M. Y. Kao. Efficient submesh operations in wormhole-routed meshes. In *Proceedings of the Sixth IEEE Symposium on Parallel and Distributed Processing*, pages 672–678, 1994.
- [154] X. He and M. Y. Kao. Regular edge labelings and drawings of planar graphs. In R. Tamassia and I. G. Tollis, editors, *Lecture Notes in Computer Science 894: Proceedings of the 1994 DIMACS Workshop on Graph Drawing*, pages 96–103. Springer-Verlag, New York, NY, 1994.
- [155] M. Y. Kao and S. H. Teng. Simple and efficient compression schemes for dense and complement graphs. In D. Z. Du and X. S. Zhang, editors, *Lecture Notes in Computer Science 834: Proceedings of the 5th Annual International Symposium on Algorithms and Computation*, pages 201–210. Springer-Verlag, New York, NY, 1994.
- [156] C. T. Ho and M. Y. Kao. Optimal broadcast in all-port wormhole-routed hypercubes. In *Proceedings of the 1994 International Conference on Parallel Processing*, volume III, pages 167–171. CRC Press, 1994.
- [157] M. Y. Kao. Total protection of analytic invariant information in cross tabulated tables. In P. Enjalbert, E. W. Mayr, and K. W. Wagner, editors, *Lecture Notes in Computer Science 775: Proceedings of the 11th International Symposium on Theoretical Aspects of Computer Science*, pages 723–734. Springer-Verlag, New York, NY, 1994.
- [158] M. Y. Kao, Y. Ma, M. Sipser, and Y. Yin. Optimal constructions of hybrid algorithms. In *Proceedings of the 5th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 372–381, 1994.
- [159] S. Azhar, G. J. Badros, A. Glodjo, M. Y. Kao, and J. H. Reif. Data compression techniques for stock market prediction. In *Proceedings of the 1994 IEEE Data Compression Conference*, pages 72–82, 1994.
- [160] X. He and M. Y. Kao. Parallel construction of canonical ordering and convex drawing of triconnected planar graphs. In K. W. Ng, P. Raghavan, N. V. Balasubramanian, and R. Y. L. Chin, editors, *Lecture Notes in Computer Science 762: Proceedings of the 4th International Symposium on Algorithms and Computation*, pages 303–312. Springer-Verlag, New York, NY, 1993.
- [161] C. T. Ho and M. Y. Kao. Optimal broadcasting on hypercubes with wormhole and E-cube routings. In *Proceedings of the 1993 International Conference on Parallel and Distributed Systems*, pages 694–697, 1993.

- [162] M. Y. Kao, S. H. Teng, and K. Toyama. Improved parallel depth-first search in undirected planar graphs. In F. Dehne, J.-R. Sack, N. Santoro, and S. Whitesides, editors, *Lecture Notes in Computer Science 709: Proceedings of the 3rd International Workshop on Algorithms and Data Structures*, pages 407–420. Springer-Verlag, New York, NY, 1993.
- [163] A. Feldmann, M. Y. Kao, J. Sgall, and S. H. Teng. Optimal online scheduling of parallel jobs with dependencies. In *Proceedings of the 25th Annual ACM Symposium on the Theory of Computing*, pages 642–651, 1993.
- [164] M. Y. Kao, J. H. Reif, and S. R. Tate. Searching in an unknown environment: An optimal randomized algorithm for the cow-path problem. In *Proceedings of the 4th Annual ACM-SIAM Symposium on Discrete Algorithms*, pages 441–447, 1993.
- [165] M. Y. Kao. Planar strong connectivity helps in parallel depth-first search. In *Proceedings of the 1992 International Computer Symposium*, pages 309–316, 1992.
- [166] M. Fürer, X. He, M. Y. Kao, and B. Raghavachari.  $O(n \log \log n)$ -work parallel algorithms for straight-line grid embeddings of planar graphs. In *Proceedings of the 4th Annual ACM Symposium on Parallel Algorithms and Architectures*, pages 410–419, 1992.
- [167] M. Y. Kao and P. N. Klein. Towards overcoming the transitive-closure bottleneck: Efficient parallel algorithms for planar digraphs. In *Proceedings of the 22nd Annual ACM Symposium on Theory of Computing*, pages 181–192, 1990.
- [168] M. Y. Kao and G. E. Shannon. Local reorientation, global order, and planar topology. In *Proceedings of the 21st Annual ACM Symposium on Theory of Computing*, pages 286–296, 1989.
- [169] A. Aggarwal, R. J. Anderson, and M. Y. Kao. Parallel depth-first search in general directed graphs. In *Proceedings of the 21st Annual ACM Symposium on Theory of Computing*, pages 297–308, 1989.
- [170] M. Y. Kao. All graphs have cycle separators and planar directed depth-first search is in DNC. In J. H. Reif, editor, *Lecture Notes in Computer Science 319: Proceedings of the 3rd Aegean Workshop on Computing*, pages 53–63. Springer-Verlag, New York, NY, 1988.

• **Selected Abstracts and Posters**

- [171] M. Ashley, T. Berger-Wolf, P. Berman, W. Chaovaitwongse, B. DasGupta, and M. Y. Kao. Approximating several covering/packing problems. In *Book of Abstracts of the International Symposium on Combinatorial Optimization 2008*, page 33, 2008.
- [172] J. Wang, M. Y. Kao, and H. Zhou. Address generation for nanowire decoders. In *Proceedings of the 17th ACM Great Lakes Symposium on VLSI*, pages 525–528, 2007.
- [173] J. G. Ruby, J. N. Zadeh, and M. Y. Kao. Computing mutational constraints within protein domains using naturally-occurring sequence variation. In L. Florea, B. Walenz, and S. Hannenhalli, editors, *Currents in Computational Molecular Biology*, pages 161–162, 2002.