Report on AAAC 2018
11th Annual Meeting of the Asian Association for Algorithms and Computation
May 18-20, 2018

The Asian Association for Algorithms and Computation was set up in 2007 to promote collaboration in all areas in theoretical computer science in the region. Its website is www.aa-ac.org. An annual meeting is held in Spring for researchers and students to present their works and exchange ideas. The meeting does not have proceedings so that participants can report on their new and ongoing work, and still be able to publish their results in other academic venues. Surveys of their own works that are recently accepted or published are also welcome. Since the first one in 2008, the annual meeting has been held in several cities in the region, including Hong Kong, Hangzhou, Pohang, HsinChu, Shanghai, Matsushima, Hiroshima, Taipei, and Beijing. In spite of the locations, contributed talks from outside the region are also very welcome.

The most recent meeting AAAC 2018 was held in Beijing from May 18 to May 20. The organizing team includes Prof. Xiaoming Sun and Prof. Jialin Zhang, Institute of Computing Technology, Chinese Academy of Sciences, and their team. The website of the event is http://theory.ict.ac.cn/aaac2018. AAAC 2018 featured three invited talks, two tutorials, and twenty-six contributed talks. There were fifty-five participants from Mainland China, Japan, South Korea, Hong Kong, and Taiwan. This year's contributed talks spanned eight parallel sessions, and touched on many topics such as games, combinatorial optimization, graph algorithms, matching, scheduling, approximation algorithm, etc. The rich spectrum of topics reflects the active research in many areas of theoretical computer science in the region.

The invited talks were given by Prof. Uri Zwick of the Tel Aviv University, Prof. Shang-Hua Teng of the University of Southern California, and Prof. David Woodruff of the Carnegie Mellon University. Prof. Zwick's talk was "Randomized Pivoting Rules for the Simplex Algorithm – Lower and Upper Bounds". Prof. Zwick presented the efforts by various researchers, including himself and his collaborators, on obtaining randomized pivoting rules with subexponential running time. The central open problems are whether there is a polynomial bound on

the diameter of a linear programming polytope and whether there is a faster pivoting rule. Prof. Teng's talk was "Scalable Algorithms in the Age of Big Data and Network Sciences: Characterization, Primitives, and Techniques". Prof. Teng advocated the importance of nearly linear time algorithms when problem sizes scale up. Recent breakthroughs on Laplacian solvers and maximum flows by himself and others are good examples. Prof. Teng also proposed some new problems in this direction. Prof. Woodruff's talk was "Relative Error Tensor Low Rank Approximation". After introducing the background on low rank matrix approximation, Prof. Woodruff talked about results by himself and collaborators on low rank tensor approximation. A tensor can be regarded as a multi-dimensional relational table, so a low rank tensor approximation finds immediate applications in learning and data mining.

The tutorials were given by Prof. Shengyu Zhang of the Chinese University of Hong Kong and Dr. Wei Chen of Microsoft Research Asia. In his tutorial "Nonlinear Dimensionality Reduction by Manifold Learning", Prof. Zhang covered the basics of the popular learning methods, including, locally linear embedding, ISOMAP, Laplacian Eigenmap, and Hessian locally linear embedding. He also introduced his recent work on this problem that addresses the issues of handling noise and non-convex domains. Prof. Chen's tutorial was "Influence Maximization: A Test Ground for Submodular Optimization, Online Learning, Game Theory, etc". Influence maximization models the spread of information through a social network, and there has been a growing interest in the area since its introduction fifteen years ago. Prof. Chen discussed core problems and results in this area as well as their connections to submodular optimization, online learning, and game theory.

In addition to academic exchanges, the participants of AAAC 2018 also had the opportunity to make new contacts, taste the local cuisines, and enjoy Beijing in Spring.

The next meeting, AAAC 2019, will be held at the Yonsei University, Seoul, South Korea. Prof. Yo-Sub Han and Prof. Hyung-Chan An of the Yonsei University will be the organizers. We look forward to continued support from the local theoretical computer science community, and we welcome participation from other regions as well.

Siu-Wing Cheng
Chair, AAAC