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Introduction

Special issue on ALT 2017: Guest Editors' Introduction



This special issue of the *Theoretical Computer Science* journal is dedicated to selected papers from ALT 2017, the 28th International Conference on Algorithmic Learning Theory. The conference was held at the University of Kyoto on the 15th to the 17th of October, 2017. The conference was also colocated with the 20th International Conference on Discovery Science (DS 2017).

Nine papers were invited to and accepted the invitation to submit expanded versions of their ALT 2017 papers, which then underwent the standard reviewing process of *Theoretical Computer Science*. These papers were selected for their theoretical significance and for their potential impact on the field of Learning Theory and on the broader research community.

The selected papers nicely showed the breadth of current research in learning theory. They spanned the fields of teaching complexity, query learning, online learning, Markov chain choice models, statistical learning, neural networks, and new models of learning. They are as follows:

- “The power of random counterexamples,” by Dana Angluin and Tyler Dohrn.
- “Lifelong learning in costly feature spaces,” by Maria-Florina Balcan, Avrim Blum and Vaishnavh Nagarajan.
- “Erasing pattern languages distinguishable by a finite number of strings,” by Fahimeh Bayeh, Ziyuan Gao, and Sandra Zilles.
- “The complexity of explaining neural networks through (group) invariants,” by Danielle Ensign, Scott Neville, Arnab Paul, and Suresh Venkatasubramanian.
- “Tight bounds on ℓ_1 approximation and learning of self-bounding functions,” by Vitaly Feldman, Pravesh K Kothari and Jan Vondrak.
- “Parameter identification in Markov chain choice models,” by Arushi Gupta and Daniel Hsu.
- “A modular analysis of adaptive (non-)convex optimization: optimism, composite objectives, and variational bounds,” by Pooria Joulani, Andras Gyorgy and Csaba Szepesvari.
- “Scale-invariant unconstrained online learning,” by Wojciech Kotlowski.
- “New bounds on the price of bandit feedback for mistake-bounded online multiclass learning,” by Phil Long.

We are grateful for the authors of these papers and to the program committee for helping us select papers for this special issue, and we especially thank Sandra Zilles, the Steering Committee chair of ALT during the 2017 conference for her guidance. We also thank the anonymous reviewers and the *Theoretical Computer Science* editorial staff for their efforts for this issue.

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