

Preface

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This volume contains the accepted technical papers and abstracts of invited talks and posters presented at the Eighth Symposium on Conformal and Probabilistic Predictions with Applications (COPA 2019) held in Varna (Bulgaria) on September 9–11, 2019.

There are two invited talks, “Mathematics of Deep Learning” by Professor Alexander Balinsky, Cardiff School of Mathematics, UK, and “Prediction and exchangeable processes” by Professor Peter McCullagh, Department of Statistics, University of Chicago, USA.

The main part of this volume presents some latest advances in the theory and applications of conformal predictors. There are 14 papers from 8 countries, which were selected through a rigorous reviewing process. The volume is divided into three parts: the first part includes theoretical papers devoted to conformal prediction, the second part papers on probabilistic and competitive online prediction, and the final part is devoted to applications of conformal prediction.

The largest first part—Conformal prediction—consists of nine papers:

- “Interpretable and specialized conformal predictors” by Ulf Johansson, Tuwe Löfström, Henrik Boström, and Cecilia Sönströd;
- “Ensembles based on conformal instance transfer” by Shuang Zhou, Evgueni Smirnov, and Gijs Schoenmakers;
- “Split knowledge transfer in learning under privileged information framework” by Niharika Gauraha, Fabian Söderdahl, and Ola Spjuth;
- “Combining prediction intervals on multi-source non-disclosed regression datasets” by Ola Spjuth, Robin Carrión Brännström, Lars Carlsson, and Niharika Gauraha;
- “Conformal predictor combination using Neyman–Pearson Lemma” by Paolo Toccalci;
- “Test statistics and p-values” by Yuri Gurevich and Vladimir Vovk;
- “Universally consistent conformal predictive distributions” by Vladimir Vovk;
- “Predicting with confidence from survival data” by Henrik Boström, Ulf Johansson, and Anders Vesterberg;

- “Coreset-based conformal prediction for large-scale learning” by Nery Riquelme-Granada, Khuong Nguyen, and Zhiyuan Luo.

There are two papers in the second part—Probabilistic prediction:

- “Online learning with continuous ranked probability score” by Vladimir V’yugin and Vladimir Trunov;
- “Competitive online regression under continuous ranked probability score” by Raisa Dzhamtyrova and Yuri Kalnishkan.

Finally, there are three papers in the third part—Applications:

- “Conformal prediction for students’ grades in a course recommender system” by Raphaël Morsomme and Evgueni Smirnov;
- “Applying conformal prediction to control an exoskeleton” by Charalambos Eliades and Harris Papadopoulos;
- “A deep neural network conformal predictor for multi-label text classification” by Andreas Paisios, Ladislav Lenc, Jiří Martínek, Pavel Král, and Harris Papadopoulos.

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