

## Preface

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This volume contains the Proceedings of the Eleventh Symposium on Conformal and Probabilistic Prediction with Applications (COPA 2022), hosted by University of Brighton, UK. The Symposium is held in Brighton on August 24–26, 2022.

Overall, 17 full papers have been accepted for publication in the Proceedings of Machine Learning Research, Volume 179. The papers are divided into four groups:

- **Implementations**, two papers;
  - *Tutorial for using conformal prediction in KNIME* by Tuwe Löfström, Artem Ryasik and Ulf Johansson
  - *Crepes: a Python Package for Generating Conformal Regressors and Predictive Systems* by Henrik Boström
- **Venn prediction**, three papers;
  - *Assessing Explanation Quality by Venn Prediction* by Amr Alkhatib, Henrik Boström and Ulf Johansson
  - *Calibration of Natural Language Understanding Models with Venn-ABERS Predictors* by Patrizio Giovannotti
  - *Well-Calibrated Rule Extractors* by Ulf Johansson, Tuwe Löfström and Niclas Ståhl
- **Real-world applications**, six papers;
  - *Conformal prediction of small-molecule drug resistance in cancer cell lines* by Saiveth Hernandez-Hernandez, Sachin Vishwakarma and Pedro Ballester
  - *Uncertainty Estimation for Single-cell Label Transfer* by Robin Khatri and Stefan Bonn
  - *Cough-based COVID-19 detection with audio quality clustering and confidence measure based learning* by Alice E. Ashby, Julia A. Meister, Khuong An Nguyen, Zhiyuan Luo and Werner Gentzke

- *Online Portfolio Hedging with the Weak Aggregating Algorithm* by Najim Al-Baghdadi, Yuri Kalnishkan, David Lindsay and Sian Lindsay
- *Robust Gas Demand Forecasting with Conformal Prediction* by Mouhcine Mendil, Luca Mossina, Marc Nabhan and Kevin Pasini
- *Conformal prediction for hypersonic flight vehicle classification* by Zepu Xi, Xuebin Zhuang and Hongbo Chen

- **Conformal prediction and uncertainty quantification**, six papers;

- *Conformal testing: binary case with Markov alternatives* by Vladimir Vovk, Ilia Nouretdinov and Alexander Gammerman
- *A Betting Function for addressing Concept Drift with Conformal Martingales* by Charalambos Eliades and Harris Papadopoulos
- *On efficiency of Learning Under Privileged Information* by Ilia Nouretdinov
- *Tensor-Train Kernel Learning for Gaussian Processes* by Max Kirstein, David Sommer and Martin Eigel
- *Pruning Neural networks for inductive conformal prediction* by Xindi Zhao and Anthony Bellotti
- *Ellipsoidal conformal inference for Multi-Target Regression* by Soundouss Mesoudi, Sébastien Destercke and Sylvain Rousseau

In addition, five posters have also been accepted for presentation and their extended abstracts are included in the proceedings:

- **Posters with extended abstracts**, five contributions;

- *Prediction of Energy Consumption with Inductive Venn-Abers Predictive Distribution* by Ilia Nouretdinov and James Gammerman
- *Communication-efficient Conformal Prediction for Distributed Datasets* by Nery Riquelme-Granada, Zhiyuan Luo and Khuong An Nguyen
- *House Price Prediction with Confidence: Empirical Results from the Norwegian Market* by Anders Hjort
- *Conformal Multistep-Ahead Multivariate Time-Series Forecasting* by Filip Schlembach, Evgueni Smirnov and Irena Koprinska
- *Conformal Decision Rules* by Husam Abdelqader, Evgueni Smirnov, Marc Pont and Marciano Geijselaers

The Symposium includes two tutorials and three keynote speakers:

- **Tutorials**

- *Conformal Regressors and Predictive Systems - a Gentle Introduction* by Henrik Boström, KTH, Royal Institute of Technology, Sweden
- *Applications of Conformal Prediction* by Lars Carlsson, Universal Prediction AB, Gothenburg, Sweden and Royal Holloway, University of London, UK, and Ernst Ahlberg, Universal Prediction AB, Gothenburg, Sweden and Department of Pharmaceutical Biosciences, Uppsala University, Sweden

- **Keynote presentations**

- *Uncertainty Quantification in Machine Learning: From Aleatoric to Epistemic* by Eyke Hüllermeier, University of Munich, Germany
- *Conformal prediction beyond exchangeability* by Rina Foygel Barber, University of Chicago, USA
- *Uncertain data in learning: challenges and opportunities* by Sébastien Destercke, University of Technology of Compiègne, France

We are very grateful to the Programme and Organising Committees; the success of the Symposium would have been impossible without their hard work. We are also indebted to the sponsor University of Brighton, in particular, Prof. Mohammed Arif (Dean) and Prof. Alison Bruce (Associate Dean) for facilitating the funding.

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