

Preface

The BIRS Workshop 15w2181 in Banff was dedicated to stimulating a cross-domain integrative machine learning approach and appraisal of “hot topics” toward tackling the grand challenge of reaching a level of useful and useable computational intelligence with a focus on real-world problems, such as in the health domain. This encompasses learning from prior data, extracting and discovering knowledge, generalizing the results, fighting the curse of dimensionality, and ultimately disentangling the underlying explanatory factors in complex data, i.e., to make sense of data within the context of the application domain.

The workshop particularly tried to contribute advancements in promising novel areas as, e.g., at the intersection of machine learning and topological data analysis. History has shown that most often the overlapping areas at intersections of seemingly disparate fields are key for stimulation of new insights and further advances. This is particularly true for the extremely broad field of machine learning.

Successful machine learning needs a concerted effort, fostering integrative research between experts ranging from diverse disciplines – from data science to data visualization and always taking into account issues of privacy, data protection, safety, and security. Tackling such complex research undertakings needs both disciplinary excellence and cross-disciplinary networking without boundaries, and a cross-domain integration of experts – like what the international HCI-KDD group is doing now for many years. Consequently, we thank all our international colleagues who persistently energize our activities and support our general motto: “Science is to test crazy ideas – Engineering is to put these ideas into practice.”

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Extraction

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