Preface

Science, technology, and commerce increasingly recognize the importance of machine learning approaches for data-intensive, evidence-based decision making.

This is accompanied by increasing numbers of machine learning applications and volumes of data. Nevertheless, the capacities of processing systems or human supervisors or domain experts remain limited in real-world applications. Furthermore, many applications require fast reaction to new situations, which means that first predictive models need to be available even if little data is yet available. Therefore approaches are needed that optimize the whole learning process, including the interaction with human supervisors, processing systems, and data of various kind and at different timings: techniques for estimating the impact of additional resources (e.g. data) on the learning progress; techniques for the active selection of the information processed or queried; techniques for reusing knowledge across time, domains, or tasks, by identifying similarities and adaptation to changes between them; techniques for making use of different types of information, such as labeled or unlabeled data, constraints or domain knowledge. Such techniques are studied for example in the fields of adaptive, active, semi-supervised, and transfer learning. However, this is mostly done in separate lines of research, while combinations thereof in interactive and adaptive machine learning systems that are capable of operating under various constraints, and thereby address the immanent real-world challenges of volume, velocity and variability of data and data mining systems, are rarely reported.

Therefore, this workshop aims to bring together researchers and practitioners from these different areas, and to stimulate research in interactive and adaptive machine learning systems as a whole. This workshop aims at discussing techniques and approaches for optimizing the whole learning process, including the interaction with human supervisors, processing systems, and includes adaptive, active, semi-supervised, and transfer learning techniques, and combinations thereof in interactive and adaptive machine learning systems. Our objective is to bridge the communities researching and developing these techniques and systems in machine learning and data mining. Therefore we welcome contributions that present a novel problem setting, propose a novel approach, or report experience with the practical deployment of such a system and raise unsolved questions to the research community.

All in all, we accepted five regular papers (7 papers submitted) and six short papers (7 submitted) to be published in these workshop proceedings. The authors discuss approaches, identify challenges and gaps between active learning research and meaningful applications, as well as define new application-relevant research directions. We thank the authors for their submissions and the program committee for their hard work.

September 2018

Georg Krempl, Vincent Lemaire, Daniel Kottke
Adrian Calma, Andreas Holzinger, Robi Polikar, Bernhard Sick

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