

Preface

Both within AI systems and in interactive systems, the ability to explain reasoning processes and results can substantially affect system usability. For example, in recommender systems good explanations may help to inspire user trust and loyalty, increase satisfaction, make it quicker and easier for users to find what they want, and persuade them to try or buy a recommended item.

Current interest in mixed-initiative systems provides a new context in which explanation issues may play a crucial role. When knowledge-based systems are partners in an interactive socio-technical process, with incomplete and changing problem descriptions, communication between human and software systems is a central part. Explanations exchanged between human agents and software agents may play an important role in mixed-initiative problem solving.

Other disciplines such as cognitive science, linguistics, philosophy of science, psychology, and education have investigated explanation as well. They consider varying aspects, making it clear that there are many different views of the nature of explanation and facets of explanation to explore. Within the field of knowledge-based systems, explanations have been considered as an important link between humans and machines. There, their main purpose has been to increase the confidence of the user in the system's result, by providing evidence of how it was derived. Additional AI research has focused on how computer systems can themselves use explanations, for example to guide learning.

This volume contains the papers presented at the ECAI 2010 workshop on Explanation-aware Computing (ExaCt2010) held on August 16, 2010, in Lisbon, Portugal. The major goal of the workshop was to bring researchers, scientists from both industry and academia, and representatives from such different communities and fields as Informatics, Philosophy, and Sociology, together to study, understand, and explore the aspects of explanation in IT-applications. The papers presented in this volume illustrate some of the variety of perspectives on explanation and recent progress.

Atzmüller and Roth-Berghofer present a variety of dimensions in the Mining and Analysis Continuum of Explaining (MACE) that need to be considered when building datamining applications, and discuss the application of the MACE in the context of social software.

Forcher and Roth-Berghofer extend their approach on Explanation-Aware Software Design (EASD), which generally aims at making software systems smarter in interactions with their users. In their paper they present an abstract model for explanation generation and describe the realisation of that approach for the semantic search engine Koios using Semantic Web technology.

Kapetanakis et al. develop an approach for providing explanation to the intelligent diagnosis and monitoring of business workflows based on operation data in the form of temporal log data.

Možina et al. use Argument-Based Machine Learning (ABML) to address the problem that the justifications provided by machine learning algorithms that learn simple symbolic models—which are often seen as an advantage of those approaches—are frequently hard to understand.

Finally, Sonntag and Theobald present a generic dialogue shell that can automatically infer previously unknown knowledge (facts) and provide explanations for the inference steps involved. The system also generates explanation graphs, which can be displayed in the GUI of the dialogue shell and help the user understand the underlying reasoning processes.

There were 7 submissions to ExaCt 2010. Each submission was reviewed by at least three programme committee members, and 5 papers were accepted. This volume was produced using the EasyChair system¹.

ExaCt 2010² continued a series of workshops begun with a AAAI Fall symposium in 2005³, a AAAI-07 workshop⁴, an ECAI-08 workshop⁵, and an IJCAI-09 workshop⁶. The workshop series aims to draw on multiple perspectives on explanation, to examine how explanation can be applied to further the development of robust and dependable systems and to illuminate system processes to increase user acceptance and feeling of control. The presentations and discussions at this workshop have shown the value of sharing perspectives to clarify and advance research in explanation-aware computing.

Readers who would like to participate in further discussions on this topic or like to receive further information about future workshops might consider joining the Yahoo!-group explanation-research⁷. More information on explanation research is available at the website on-explanation.net⁸.

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¹ <http://www.easychair.org>

² <http://exact2010.workshop.hm>

³ <http://exact2005.workshop.hm>

⁴ <http://exact2007.workshop.hm>

⁵ <http://exact2008.workshop.hm>

⁶ <http://exact2009.workshop.hm>

⁷ <http://tech.groups.yahoo.com/group/explanation-research/>

⁸ <http://on-explanation.net>

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