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Invited Keynote Talk:

Collaborative Multi-Expert-Systems

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Abstract

Expert systems solve problems within a specialized domain that ordinarily requires human expertise. Although, there exist a lot of successful expert systems and in general they are known for suffering from the knowledge acquisition bottleneck. This talk presents a research vision that aims at overcoming this problem by systematically considering multiple experts (systems) as well as the wisdom of the crowd. The corresponding software architecture integrates concepts from software engineering (experience factory, software product lines) and artificial intelligence (multi-agent systems, case-based reasoning). In the scope of this research case-based reasoning is used in various ways: for representing and processing the experience part of expertise, for supporting continuous knowledge evolution and increasing knowledge formalization, as well as for providing an open framework for constructing learning expert systems. The current state of implementation is presented as along with open challenges and an outlook on future research.

Short Bio

Klaus-Dieter Althoff is professor for Artificial Intelligence at the University of Hildesheim (UHI), Germany, and since May 2010 he is leading the Competence Centre Case-Based Reasoning at the German Research Centre on Artificial Intelligence (DFKI) in Kaiserslautern based on a cooperation contract between DFKI and UHI. Klaus received a PhD on learning expert systems for technical diagnosis (1992) and a habilitation degree on evaluation of case-based reasoning (CBR) systems (1997) both from University of Kaiserslautern. Before entering UHI in 2004, he worked for the Fraunhofer Institute for Experimental Software Engineering since 1997, where he was responsible for experience management systems and processes. He was programme co-chair of ICCBR'99 and ECCBR'08 as well as local co-chair of EWCBR'93. He was/is team member and/or project leader of a number of projects on case-based reasoning and related research topics. The current research focus includes modelling expertise in its different facets, knowledge engineering and extraction for CBR, distributed architectures with CBR, integration of CBR with various semantic technologies, deep integration between CBR and explanation reasoning, and learning expert systems. At DFKI, the Competence Centres CBR (Kerstin Bach) and Multi-Media Analysis and Data Mining (Dr. Armin Stahl) are responsible for the CBR tool myCBR, which is available as an open source project and further developed in the CBR-related projects at DFKI as well as in a joint project between DFKI and Prof. Roth-Berghofer (University of West London).