Keynote Speaker

Toward Approximate Analytics – Approximate Query Engines & Approximate Data Exploration

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Abstract

Artificial Intelligence (AI) methods are regaining a lot of attention in the areas of data analytics and decision support. Given the increasing amount of information and computational resources available, it is now possible for intelligent algorithms to learn from the data and assist humans more efficiently. Still, there is a question about the goals of learning and a form of the resulting data-driven knowledge. It is evident that humans do not operate with precise information in decision-making and, thus, it might be unnecessary to provide them with complete outcomes of analytical processes. Consequently, the next question arises whether approximate results of computations or results derived from the approximate data could be delivered more efficiently than their standard counterparts. Such questions are analogous to the ones about precision of calculations conducted by machine learning and KDD methods, whereby various heuristic algorithms could be boosted by letting them rely on approximate computations. This leads us toward discussion of the importance of approximations in the areas of machine intelligence and business intelligence and, more broadly, the meaning of approximate derivations and representations for various aspects of AI. In this talk, we refer to this discussion using three industry-related case studies: 1) The case of approximate analytical database software based on the paradigms of rough-granular computing applied in the area of cyber-security; 2) The case of rough-set-based feature subset ensemble selection / approximation methodology applied in the area of online health support services; and 3) The case of approximate generation of the training data used for tuning an online eSports coaching platform.