Automated Algorithm Selection –Predict which algorithm to use! (Keynote)

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Abstract. To achieve state-of-the-art performance, it is often crucial to select a suitable algorithm for a given problem instance. For example, what is the best search algorithm for a given instance of a search problem; or what is the best machine learning algorithm for a given dataset? By trying out many different algorithms on many problem instances, developers learn an intuitive mapping from some characteristics of a given problem instance (e.g., the number of features of a dataset) to a well-performing algorithm (e.g., random forest). The goal of automated algorithm selection is to learn from data, how to automatically select a well-performing algorithm given such characteristics. In this talk, I will give an overview of the key ideas behind algorithm selection and different approaches addressing this problem by using machine learning.