Rank correlation measures, which originated in applied statistics, are nowadays used in many fields of application, such as information retrieval or sports analytics. Roughly speaking, a rank correlation measure can be seen as a measure of similarity (or, subsequent to a suitable transformation, a measure of distance) between two rankings. Henzgen and Hüllermeier [1] introduce a novel class of weighted rank correlation measures, which allows for assigning weights to positions. Thanks to this extension, deviations between two rankings may influence the similarity to a different extent, depending on which positions are involved. For example, when comparing the lists of websites returned by two search engines (queried with the same key words), one is typically more interested in the top of the ranking than in the bottom.

The aforementioned weights can be considered as parameters of the rank correlation measure. Thus, given a specific application, the performance of the measure as a similarity or distance can be optimized by tuning the weights in a proper way. This idea is closely connected to metric learning [2], that is, learning or adapting a distance measure for a specific purpose in a data-driven way. In metric learning, different types of training information are conceivable. For example, the data observed may suggest that the distance between rankings $A$ and $B$ should be smaller than the distance between $A$ and $C$.

Taking existing methods in the field of metric learning as a point of departure, the goal of the thesis is to develop methods for the data-driven adaptation of weights in weighted rank correlation.

Requirements: Development of one or more methods for weight adaptation; empirical evaluation of the method on suitable data.

Prerequisites: Basic knowledge in data mining; programming skills.

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References
