Top-k List Aggregation: Mathematical Formulations and Polyhedral Comparisons

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Abstract

Top-k lists are being increasingly utilized in various fields including information retrieval, machine learning, and recommendation systems. Since multiple top-k lists may be generated by different algorithms to evaluate the same set of entities or a system of interest, there is often a need to consolidate this collection of heterogeneous top-k lists to obtain a more robust and coherent list. This work introduces various exact mathematical formulations of the top-k lists aggregation problem under the generalized Kendall tau distance. Furthermore, the strength of the proposed formulations is analyzed from a polyhedral point of view.

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