

# Rank-sensitive Proportional Aggregations in Dynamic Recommendation Scenarios

Invited Talk

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## ABSTRACT

In this talk, we focus on the problem of proportionality preservation in dynamic recommendation scenarios. Our starting point is the belief that different (e.g. collaborative vs. content-based) recommender systems (RS) may provide complementary views on the user's preferences or needs. By using only a single best performing RS, we inherently lose other viewpoints, which may lead to too narrow-minded recommendations and in the long-run deteriorate user satisfaction. Instead, we introduce a FuzzDA framework aiming to provide an unbiased aggregation of individual RS under the constraints of dynamic recommendation scenario. The framework consists of three main components: aggregator, iterative votes assignment strategy and negative implicit feedback incorporation strategy. The aggregator algorithm is based on D'Hondt's algorithm for mandates allocation (with several modifications) and aggregates outputs of individual RS in ranking-aware proportionality-preserving manner w.r.t. votes assigned to individual RS. Votes

assignment strategies observe the performance of individual RS (as well as several contextual features) and transform them into the assigned votes. Finally, negative implicit feedback strategies focus on short-term user-specific discrimination on the item level. In the talk we further report on evaluations of FuzzDA framework, where framework variants were especially successful in maintaining very good iterative novelty vs. click-through rate ratios and performed well w.r.t. several diversity metrics.

## Reference Format:

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