Generating Fair Rankings with Multinomial Protected Attributes

Situation: Rankings are very widely used in our life to set priorities, which are closely related to making decisions. Accordingly, our concerns about algorithmic bias in rankings, in which the rankings are generated unfairly, have grown bigger. Therefore, generating fair rankings is an indispensable work as it builds the basis for our decisions and indeed, ranking algorithms have risen to a significant topic in machine learning. According to prior studies, the algorithm for generating a fair top-k ranking: FA*IR, which assures the appearance of specific percentage of protected group from a binomial protected attribute, has already been invented. Now our task remains to further develop this algorithm for multinomial protected attributes.

Proposed Solution: Generate greedy algorithm with multinomial protected groups based on the work "FA*IR: A Fair Top-k Ranking Algorithm" and hence appropriate fairness test adjusted to the multinomial case.