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# Contrastive Explanations for Recommendation Systems

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## Abstract

We develop an automatic method that, given a contrastive query from the user, generates contrastive explanations based on items' features and users' preferences. That is, once receiving a recommendation, the users have the option to ask the system why it did not recommend a specific different item. Our method enables a recommendation system to reply with a meaningful and convincing personalized explanation. For example, the recommendation system may recommend a Samsung S22 phone. The user may ask the system why it did not recommend the Xiaomi 12. Based on the user's preferences, all other users' preferences, and the specific phones in question, our method might infer that a good camera is particularly important to the user, and thus, say that the Samsung S22 includes a better camera. We show that humans are more convinced that the recommended item is better than the contrastive item when using our contrastive explanations.