

ABSTRACT

An item rating and recommendation platform identifies rating data including respective ratings of multiple items with respect to multiple users; identifies user-feature data including user features contributing to the respective ratings of the multiple items with respect to the multiple users; and receives, from a social network platform via a secret sharing scheme without a trusted initializer, manipulated social network data computed based on social network data and a first number of random variables. The social network data indicate social relationships between any two of the number of users. In the secret sharing scheme without the trust initializer, the social network platform shares with the item rating and recommendation platform manipulated social network data without disclosing the social network data. The item rating and recommendation platform updates the user-feature data based on the rating data and the manipulated social network data.