Using Machine Learning Techniques to Support Online Reputation Model

استخدام خوارزميات تعلم اللألة في دعم أنظمة تقيّم المنتجات على الانترنت

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Abstract

Users usually perform billion of transactions daily on internet and these transactions are easily influenced by global opinions of other users. Therefor reputation system is emerged as solution to facilitate user decision regarding purchasing items and goods. The rating aggregation process is the most important part of reputation system which is used to aggregate ratings to produce item quality score. Practically, there are plenty of industrial reputation systems on internet such as eBay, Amazon, IMDb and RottenTomato, which they use either naive methods or their own statistical models. These methods suffer from some limitation such as they do not take in consideration the trust factor of users who provided ratings. Furthermore, they cannot discover trends emerging in new ratings. Other sophisticated rating aggregation models that use weighted average technique focus on one aspect of users' quality. For example, strictness and leniency of user. So, this thesis proposes a new rating aggregation method by first extracting, for each user, the following factors from rating dataset: 1) User Tendency, 2) User fluctuation, 3) Total number of ratings provided by each user in order to see the experience of user in providing ratings and 4) the average of errors for all ratings provided by a user. These factors can help us to determine the trust of user in providing rating. After determining the previous four factors we apply machine learning algorithms (LR, RT, SVR, and KNN) to predict the user trust. All machine learning models will be validated using Cross-validation approach and evaluated using MAE accuracy measure and Kendall. After that we produce our ML models to calculate the item scores, then we using a validation methods MAE and Kendall to check the accuracy of our models. Also we compare our ML models with other reputation model, and we find that our ML models is give high accuracy than other reputation models especially RT Model and our ML models is give high accuracy in dense dataset .