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**Part1:**

In the first part, in order to predict the revenue, I preprocess the runtime, production countries, spoken language, cast, crew, homepage and genres before loading them into different model.

As we all know, the movie revenue is directly linked to the popularity of actors and directors, so I picked some famous actors and directors after 1990 from authoritative website, cause most of movies in the database are from 1990. The website shows below:

<https://www.imdb.com/list/ls058011111/>

<https://www.studiobinder.com/blog/best-movie-directors-of-all-time/>

In order to distinguish the influence of film companies on profits, we divide them into three types according to whether they are famous or not, so that the model can be classified. I also divide the runtime into four parts, because the movie which run longer are more likely to get more revenue.

By choosing three models logistic regression, linear regression and random forest regression, randomforest model has the best prediction, which correlation is 0.33.

*# LogisticRegression model*

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*# LinearRegression model*

图形用户界面, 表格

描述已自动生成

*# RandomForestRegressor model*

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**Part2:**

In order to increase the accuracy for the rating prediction, I try to modify the function: “preprocess\_cast” and “preprocess\_crew”, We know that the more movies with famous actors, the more likely to get a higher score. Therefore, I divided the number of famous actors into four categories to improve accuracy.

For this part, I choose three models to predict the rating: KNN, Bagging classifier and the gradient boosting classifier, the gradint boosting classifier and KNN both have the best accuracy which almost 70%

*# # KNN model*

图形用户界面

低可信度描述已自动生成

*# GradientBoostingClassifier model*

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*#BaggingClassifier model*

表格

描述已自动生成