# Literature

The study performed by Purushotham, Liu and Kuo (<https://arxiv.org/ftp/arxiv/papers/1206/1206.4684.pdf>) partly focuses its efforts on the same dataset as our project. In their study, their objective is to predict a user’s would-be rating of an item based on available social network information, such as bookmarking preferences on del.icio.us, compared to personal taste as signalled by the indicated preferences of a user’s profile on Last.FM. To achieve this, they employ a Collaborative Filtering model, much like we attempt to implement in our project. The general idea behind the concept of Collaborative Filtering is that users that are alike will favour products that are alike as well, which can be untrustworthy at times due to common issues such as a deficiencies and an unevenness of sufficient data.

Purushotham, Liu and Kuo go the extra mile however, by also implementing both Collaborative Topic Regression and Social Matrix Factorization into their study. Matrix Factorization requires computing the latent representations of users and items given a matrix of ratings, according to Wang and Blei (<http://www.cs.columbia.edu/~blei/papers/WangBlei2011.pdf>). In the same paper, they explain that Collaborative Topic Regression constitutes users with topic interests, fluctuating the weight of both content and other users on the prediction based on the amount of users that have rated the topic. While all of these approaches are incredibly informative and certainly piqued our interest, we felt it was best to limit our project to Collaborative Filtering and not get in over our heads with much bigger-scale researches.

Additionally, Sarwar, Karypis, Konstan and Riedl (<http://www.ra.ethz.ch/cdstore/www10/papers/pdf/p519.pdf>) have experimented with a new thought-of algorithm for Recommender Systems based on Collaborative Filtering. They built an item-based recommender technique which they claim can provide an improved standard of quality when compared to widely utilised user-based recommender techniques. As part of the experiment, they investigated several possibilities for computing item-item similarities, for instance correlation between two items and cosine similarities between item vectors. To eventually retrieve the recommendations, they mainly employed weighted sum and regression models. Regression analysis comes down to comparing a dependant variable to several independent variables, observing any possible variation in the dependant variable when altering any of the independent variables and leaving the others untouched.

The paper written by Yoshii, Goto and Komatani (<http://ieeexplore.ieee.org/abstract/document/4432655/>) presents a different approach in recommending music with their hybrid recommender system. Apart from the user ratings, they analysed acoustic features of audio signals as well to be able to rank musical pieces in multiple ways. Their study attempts to leave subjective variables such as an individual’s taste and outliers out of the equation as much as they can. As a result, their system is quite extensive, but able to preserve a staggering accuracy sore, no matter the addition of users or items.