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## 1 Tutorial 11: Matrix Factorization for Recommendation Systems

In this tutorial we will analyse the dataset **MovieLens 100K** with different Matrix Factorization models.

We will use the package `surprise` that can be found at <https://surprise.readthedocs.io/en/stable/index.html>.

- (a) Install the package `surprise`.
- (b) Download the dataset **MovieLens 100K** from <https://grouplens.org/datasets/movielens/100k/>.
- (c) Import the dataset and make some explorative analysis.
- (d) Pick a model and run the `GridSearchCV` class to choose the best number of factors.
- (e) Perform a Cross-Validation routine to choose the best model among SVD, SVD biased, NMF, and NMF biased.
- (f) Choose the best model and use it to make predictions and recommendations.
- (g) Fill the function `get_top_n` to get the first  $n$  recommendations for each user from a set of predictions.

Solution in the jupyter file `L11_tutorial_solution.ipynb`.