Conclusion

In this lesson, you got your hands on some of the most important ideas associate recommendation systems:

Recommender Validation

You looked at methods for validating your recommendations (when possible) usir these cases, you could split your data into training and testing data. Frequently th time, where events earlier in time are in the training data, and events later in time dataset.

We also quickly introduced the idea of being able to see how well your recommer by simply throwing it out into the world to directly see the impact.

Matrix Factorization with SVD

Next, we looked at matrix factorization as a technique for making recommendatic singular value decomposition a technique can be used when your matrices have r this decomposition technique, a user-item (**A**) can be decomposed as follows:

$$A = U\Sigma V^T$$

Where

- U gives information about how users are related to latent features.
- Σ gives information about how much latent features matter towards recrea matrix.
- V^T gives information about how much each movie is related to latent featu

Since this traditional decomposition doesn't actually work when our matrices hav looked at another method for decomposing matrices.

FunkSVD

FunkSVD was a new method that you found to be useful for matrices with missing matrix factorization you decomposed a user-item (**A**) as follows:

$$A = UV^T$$

Where

- U gives information about how users are related to latent features.
- V^T gives information about how much each movie is related to latent featu

You found that you could iterate to find the latent features in each of these matri descent. You wrote a function to implement gradient descent to find the values w matrices.

Using this method, you were able to make a prediction for any user-movie pair in also could use it to test how well your predictions worked on a train-test split of th method fell short with new users or movies.

The Cold Start Problem

Collaborative filtering using FunkSVD still wasn't helpful for new users and new m recommend these items, you implemented content based and ranked based recc with your FunkSVD implementation.