Explicit Feedback Neural Recommender Systems

Goals:

- Understand recommender data
- Build different models architectures using Keras
- Retrieve Embeddings and visualize them
- Add metadata information as input to the model

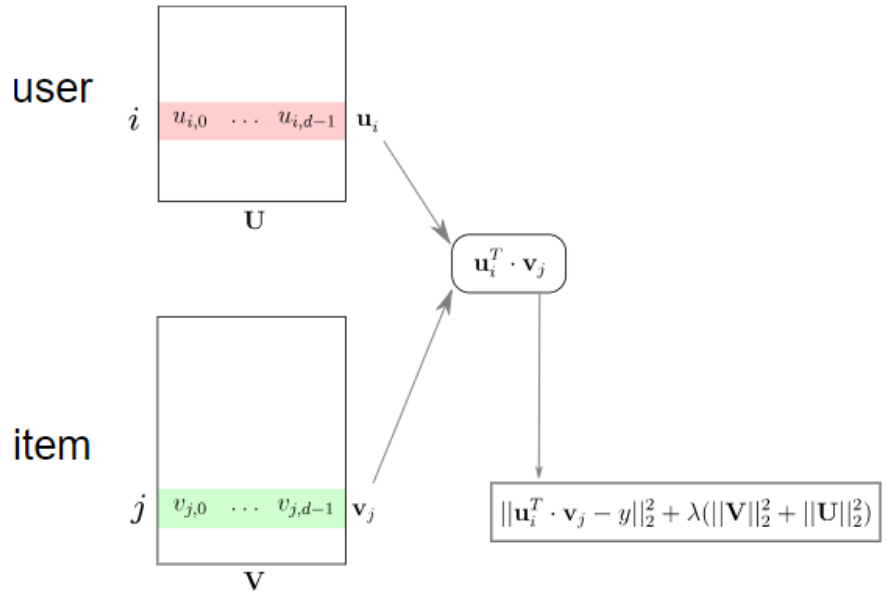
Explicit feedback: supervised ratings prediction

For each pair of (user, item) try to predict the rating the user would give to the item.

This is the classical setup for building recommender systems from offline data with explicit supervision signal.

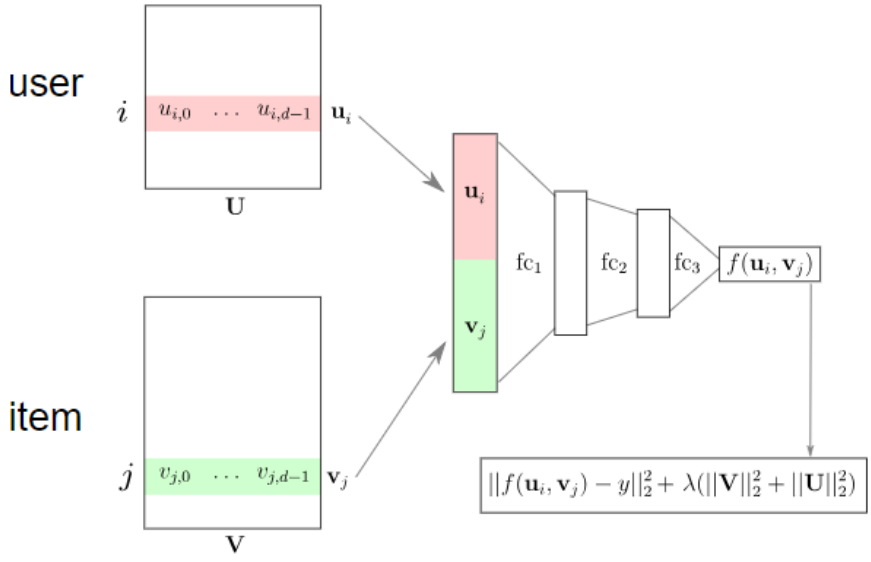
Predictive ratings as a regression problem

The following code implements the following architecture:



A Deep recommender model

Using a similar framework as previously, the following deep model described in the course was built (with only two fully connected)



Euclidean distance

$$d(x, y) = ||x - y||_2$$

- Simple with good properties
- Dependent on norm (embeddings usually unconstrained)

Cosine similarity

$$cosine(x, y) = \frac{x \cdot y}{||x|| \cdot ||y||}$$

- Angle between points, regardless of norm
- $cosine(x, y) \in (-1, 1)$
- Expected cosine similarity of random pairs of vectors is 0