LVC 2: Glossary of Notations

L = The original user-item interaction matrix

L_{ij} = Likelihood of the i^{th} user matching with the j^{th} item in user- item interaction matrix

L_i = The average of observed entries in row i of the user-item interaction matrix

n_i = The number of observed entries in row i of the user-item interaction matrix

L_j = The average of observed entries in column j of the user-item interaction matrix

n_j = The number of observed entries in column j of the user-item interaction matrix

x_i = Features of the i^{th} user

y_j = Features of the j^{th} item

U = A user embedding matrix $U \in R^{n \times d}$, where row i is the embedding for user i denoted by u_i

S = The sigma matrix; a diagonal matrix with shape $r \times r$, where r is the rank / number of latent features

V^T = An item embedding matrix $V \in R^{m \times d}$, where row j is the embedding for item j denoted by v_j

r = The rank / number of latent features

s_k = k^{th} value of sigma matrix S

u_{ik} = The value in the i^{th} row and the k^{th} column of the matrix U

v_{jk} = The value in the j^{th} row and the k^{th} column of the matrix V^T

$\widehat{p}$ = The fraction of observed entities

X = An $m \times n$ matrix

X_{ij} = The i^{th} row and the j^{th} column of matrix X