

# Content Based filtering

✓ Congratulations! You passed!

Grade  
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higher

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1. Vector  $x_u$  and vector  $x_m$  must be of the same dimension, where  $x_u$  is the input features vector for a user (age, gender, etc.)  $x_m$  is the input features vector for a movie (year, genre, etc.) True or false?

1 / 1 point

- ☐ True  
☒ False

✓ Correct  
These vectors can be different dimensions.

2. If we find that two movies,  $i$  and  $k$ , have vectors  $v_m^{(i)}$  and  $v_m^{(k)}$  that are similar to each other (i.e.,  $\|v_m^{(i)} - v_m^{(k)}\|$  is small), then which of the following is likely to be true? Pick the best answer.

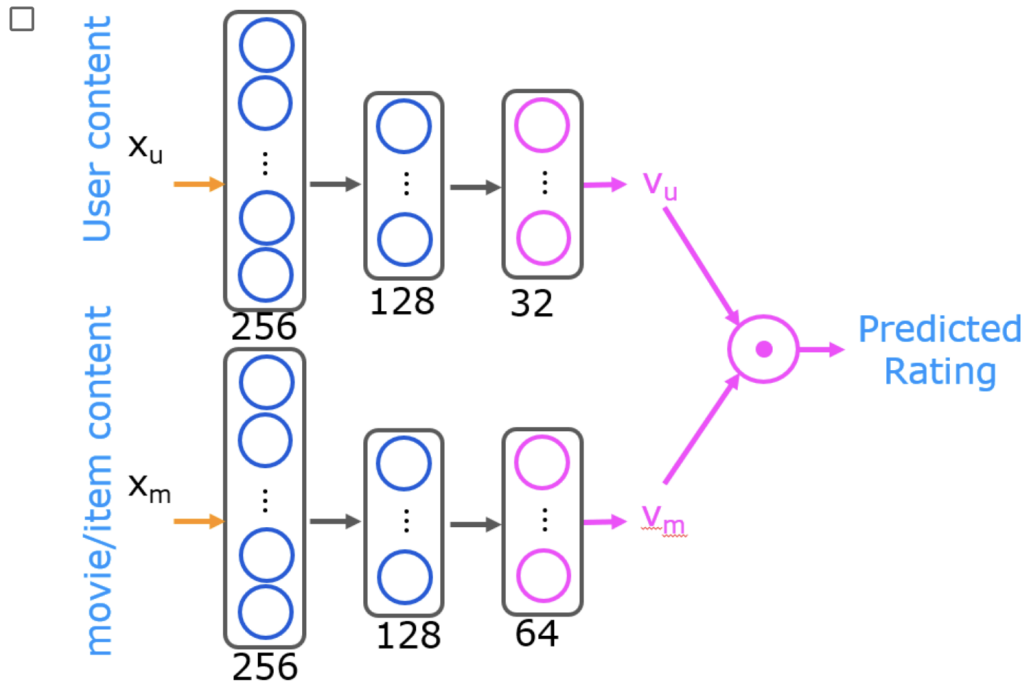
1 / 1 point

- ☐ A user that has watched one of these two movies has probably watched the other as well.  
☐ The two movies are very dissimilar.  
☐ We should recommend to users one of these two movies, but not both.  
☒ The two movies are similar to each other and will be liked by similar users.

✓ Correct  
Similar movies generate similar  $v_m$ 's.

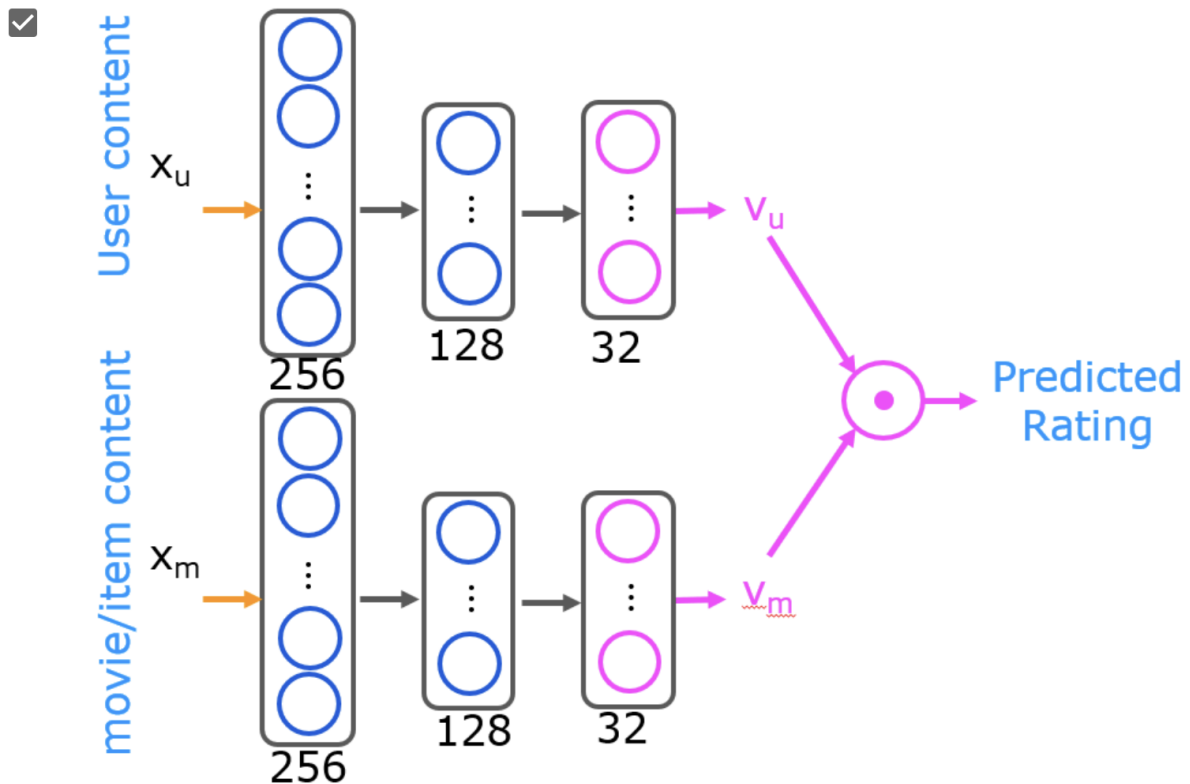
3. Which of the following neural network configurations are valid for a content based filtering application? Please note carefully the dimensions of the neural network indicated in the diagram. Check all the options that apply:

1 / 1 point



The user vector  $v_u$  is 32 dimensional, and the item vector  $v_m$  is 64 dimensional

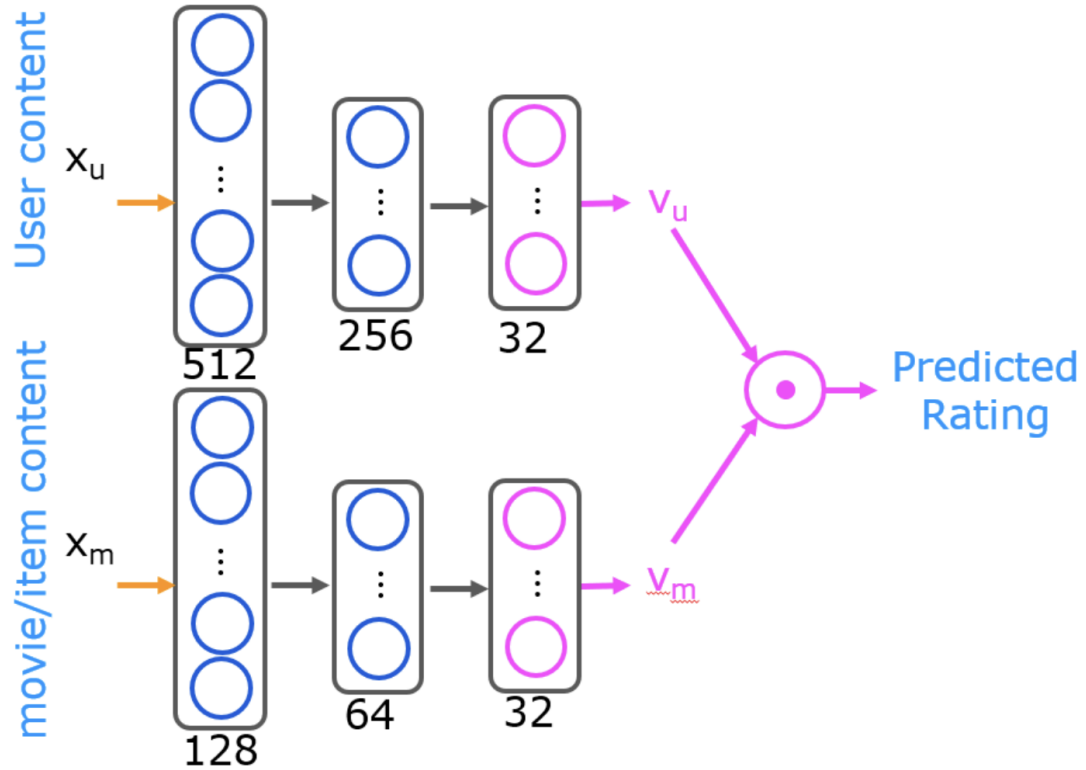
The user vector  $v_u$  is 32 dimensional, and the item vector  $v_m$  is 64 dimensional



Both the user and the item networks have the same architecture

✓ Correct

User and item networks can be the same or different sizes.

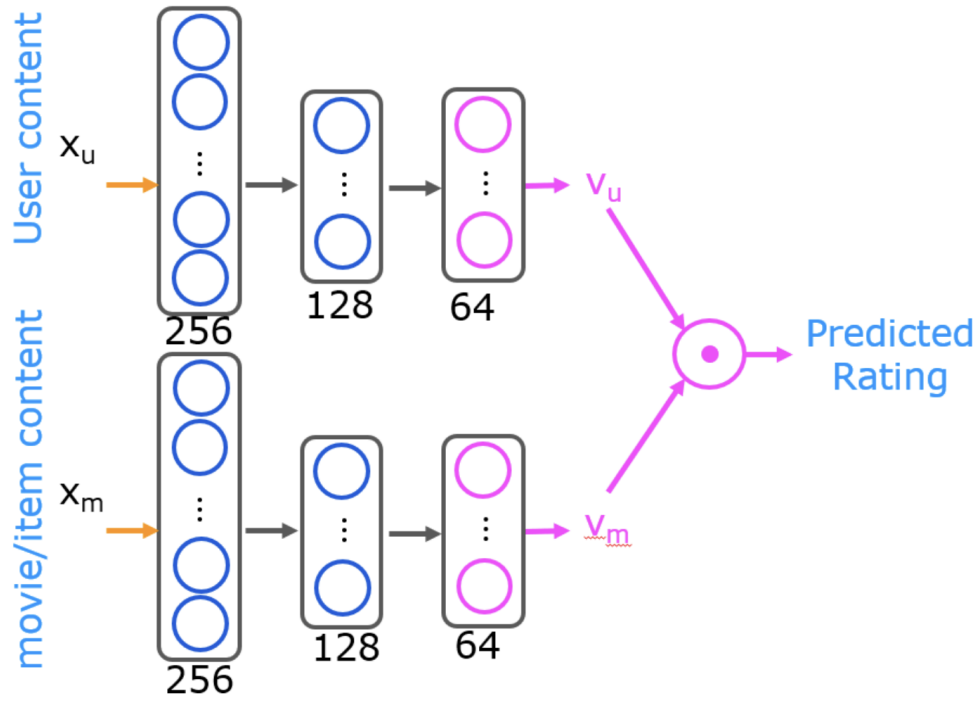


The user and the item networks have different architectures



Correct

User and item networks can be the same or different sizes.



The user and item networks have 64 dimensional  $v_u$  and  $v_m$  vector respectively



Correct

Feature vectors can be any size so long as  $v_u$  and  $v_m$  are the same size.

4. You have built a recommendation system to retrieve musical pieces from a large database of music, and have an algorithm that uses separate retrieval and ranking steps. If you modify the algorithm to add more musical pieces to the retrieved list (i.e., the retrieval step returns more items), which of these are likely to happen? Check all that apply.

1 / 1 point

- ☒ The quality of recommendations made to users should stay the same or improve.



A larger retrieval list gives the ranking system more options to choose from which should maintain or improve recommendations.

- ☒ The system's response time might increase (i.e., users have to wait longer to get recommendations)



A larger retrieval list may take longer to process which may *increase* response time.

- ☐ The quality of recommendations made to users should stay the same or worsen.

- ☐ The system's response time might decrease (i.e., users get recommendations more quickly)

5.

1 / 1 point

To speed up the response time of your recommendation system, you can pre-compute the vectors  $v_m$  for all the items you might recommend. This can be done even before a user logs in to your website and even before you know the  $x_u$  or  $v_u$  vector. True/False?

- ☒ True

- ☐ False



The output of the item/movie neural network,  $v_m$  is not dependent on the user network when making predictions. Precomputing the results speeds up the prediction process.