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Custom Loss function in tensorflow

I implemented the following Loss function using Tensorflow

$$j = \sum_{j}^{m}\left(\sum_{l=1}^{k}\left(log\left(\sum_{i=1}^{e}\left((w_i M_l)(w_j M_l) + bj - log(X_{ij})\right)^2\right)\right)^{-p}\right)^{-1}$$

where e is the number of the entities (e=15000) and m is the number of the features(m=500)

K is the number of the matrices so when k=4 this means that we have M=[M1,...M4] where each Ml is a matrix 50X50

I want to learn the wi and wj (50 dimensions) that minimise this function. Since I am new to tensorflow I am not sure whether my code is correct or not I would appreciate any help and any advice :

```
# 4 matrices each one 50X50 intialise as identity matrix
M= tf.get_variable('M_',dtype=tf.float32,initializer=Rnp) #[4,50,50]

#We (for entities) and W_tilda (for featuers) intialised frim pretrained model

We =tf.get_variable('W_',dtype=tf.float32,  initializer=WE) #[15000,50]

W_tilde = tf.get_variable('W_tilde_', dtype=tf.float32,initializer=Wj) #[500,50]
Wj = tf.nn.embedding_lookup(W_tilde, words) # [batc_hsize, 50]

log_Xij=tf.placeholder(dtype=tf.float32, shape=[m,e])# container for Log Xij (from
a coaccurance mtrix) [500,15000]

logX_js = tf.nn.embedding_lookup(log_Xij, words) # batch_size x e

b_js = tf.get_variable('b_j', dtype=tf.float32,
             initializer=tf.random_uniform_initializer(maxval=1.0,minval=-
1.0),shape = [batch_size]) # b
```

The loss is implemented as follow

```
#First the matrix multiplication
We_M = tf.einsum('el,klm->ekm', We, M)
Wj_M = tf.einsum('bl,klm->bkm', Wj, M)

# Second the dot product
dot_prod = tf.einsum('ekl,bkl->bke', We_M, Wj_M)
#reshaping
b = tf.reshape(b_js, [batch_size, 1, 1]) #[20,1,1]
```