The probability density function for exponential family can be expressed in the form:

And for the Poisson distribution:

Parameter ->

Natural parameter -> log

Inverse parameter mapping ->

Base measure ->

Sufficient statistic ->

Log-partition ->

Log-partition ->

PMF of a Poisson random variable is given as follows:

Cross Entropy =

=

=

=

=

For Poisson distribution,, ,

=

In our project, cross entropy to measure the distance between the true (), and the expected (), in this case is written as: