Question 1: What is the new partition criterion of loss functions the paper proposes, and why is it proposed?

Question 2: What problem does the *focal loss function* solve in object detection in deep learning?

Question 3: Why does the *contrastive loss function* require reconstructing the dataset?

Answer Question 1: The new partition criterion of loss functions is between loss functions of traditional machine learning and deep learning. Traditional machine learning is subdivided into classification, regression, and unsupervised scenarios– while deep learning is subdivided based on application scenarios. This is done to distinguish the differences between traditional machine learning and deep learning with regards to loss functions. The best loss function for a given scenario depends on the type of task at hand, whether that be a scenario in traditional machine learning or deep learning.

Answer Question 2: *Focal loss function* is able to solve two class imbalance problems. It solves the problem of foreground-background class imbalance as well as the imbalance of easy-hard samples. It promotes the model to focus more on the hard to classify samples with respect to loss.

Answer Question 3: *Contrastive loss function* requires a reconstructing the training set because it is involved with the deep learning scenario of Face Recognition. Images in the training set are paired together along with a corresponding label. A given pair of images in the training set would be labeled “1” if they were the same person, and “0” if they are different people. This encourages the model to ensure similarity of samples from one person, and difference of samples from different persons.