Before I introduce my code I will briefly summarize the content of this research

there are pixel based and end to end driving models， people always using pixel level explanation method to explain end to end models(including driving models), the pixel level explanation means that attribute the prediction result to the input images, and assign each pixel an important score to indicate the importance of this pixel to the final prediction result. However I think human are easier to understand object based explanation, place down a lot of research about human recognition and deep learning network Practice, that object are useful four driving tasks.

therefore in this research, we compared the object level explanation generated by the end to end driving models, we generated the object level explanation from two approaches. first approach will you generate object level explanation by the pixel based end to end driving models. the second approach we generate object level explanation by the object based end to end the driving models.

and we evaluate the object explanation generated by both approaches, and we may the experiment to evaluate the persuasibility of these two approaches’ object explanation and the pixel level explanation(previous method, Grad-CAM ). The experiment results indicate that the object level explanation are always better than pixel level explanation, no matter which approach.

The main code is divided into five different folders, each folder contain an important part of our work.

the first part: (pixel-based E2EDMS)

1.we train pixel based end to end driving models, and we make the pixel level explanation method by the Grad-CAM. we made heatmap and heatmap mask.

2. We made object level explanation method for the pixel based end to end driving models (first approach), we also made the experimental data for the objective and subjective persuasibility evaluation

The second part (object\_based\_E2EDMs)

We train object based end to end driving models. In order to do that, we first have to extract object information from BDD 100K. and we find the most appropriate hyperparameters for the object based and when the driving models. after trained the three different object based and advantaging models we use the lime explanation method to gain the importance of each object for the final prediction.（ second approach） and then we have the code that based on the object level explanation to make the data for the objective and subjective persuasibility experiment.

the third part, (Experiment preparation)

1 based on the pixel level explanation result, which is, the heat map mask, we generate the data for the objective persuasibility experiment.

2. after having pixel level data for the objective persuasibility experiment, and object level data (from two approaches) for the objective persuasibility experiment. we mix these data together for the objective experiment

3. after having pixel level data for the subjective persuasibility experiment, and object level data (from two approaches) for the subjective persuasibility experiment. we mix these data together for the subjective experiment

the 4th part (Experiment)

we use the GUI code to label the subjective and object experimental data.

the 5th part (Experiment\_result\_analyze)

we analyze the labeled data to find out the persuasibility score of the object level explanation and the pixel level explanation.

before using the code we also should put original images (original\_image.zip) into the path below:

1. Access\_github\object\_based\_E2EDMs\explain\_object\_based\_E2EDMs\original\_image

2. Access\_github\Experiment preparation\original\_image