**Supplementary explanations of supporting information**

**Data:** When collecting the data set, the vehicle angles at the time of taking each picture were renamed as the names of the pictures. The data file contains two texts, "train" and" val ". Through the program, the order of all the collected pictures was randomly shuffled, and 80% of the proportion was extracted as the training set, and 20% of the proportion was extracted as the validation set. The filtered training set is renamed and extracted as the "train.txt" file, and the filtered validation set is renamed and extracted as the "val.txt" file to facilitate subsequent operations.

**Datasets:** It is used to read the two text files "train.txt" and "val.txt" in the "Data" folder, perform data loading, and serve as the data source of PyTorch DataLoader for model training and validation.

**Diversified processing of data sets:** Diversify the collected data sets to help expand the number of data sets. This includes processing pictures to generate images with increased or decreased brightness, sharpness, chroma, X-axis and Y-axis translation, and image flipping, etc.

**Mark the runway:** The pictures are processed, and after Canny edge detection and Hough transform, the runway of the pictures is captured and marked.

**Models:** The ResNet 18 network after adding the Non Local Block and Ghost Module is stored in the file.

**Train:** The file that enables the network to train the training set, in which the ReduceLROnPlateau module is added, realizes the functions of adaptive adjustment of the learning rate and early stop mechanism.