

For the system the main inputs to the system are the video recordings of the road surrounding the vehicle as well as the current gps location of the user. Both these inputs are provided by manual sensors that are connected to the system via USB and utilize a combination of drivers and pre-existing libraries to transfer appropriate data to the embedded system for usage by the model. The outputs of the system include pictures of the pothole with a segmentation mask drawn over identifying the size, shape, etc. as well as an API request to the user's department of transportation with all the relevant data needed so they can repair the pothole in question. This process is done within the system so no data transfer is required. The current trained model works well enough for detecting potholes on the road but there is always room for improvement. From the webcam video, model inputs are taken twice a minute but theoretically if the model is good enough, it could detect potholes even through poor lighting conditions, blurry video, fog/debris, etc. In order to retrain, it would involve more pothole photos that would be hand labeled with segmentation masks and fed back into the training script.

