

Automated Counting of Bicyclists and Pedestrians

Traffic monitoring through video has been an area of research for years and though methods have continued to improve, especially in terms of automobiles, detecting and counting pedestrians and bicyclists continues to be a problem. Automobile characteristics and behaviors on roadways are very predictable while bicyclists and specifically pedestrians are highly unpredictable. The most accurate method of counting pedestrians would be to manually watch every video; however this is a slow and tedious process. Our program aims to automate as much of the process as possible and provide the user with quick, accurate estimates with efficient error checking. This is accomplished by analyzing every video, detecting any moving objects, and saving features for these objects including size, shape, and speed. The detected objects are then classified by comparing the saved object features against trained feature values for the different object types. As the videos are real world situations with countless sources for noise, the program does have errors. In a video folder containing 8 bicyclists and 28 pedestrians, the program found 9 bicyclists and 35 pedestrians. In another folder with 38 bicyclists and 3 pedestrians, the program found 38 bicyclists and 7 pedestrians. The results vary on other folders, with bicyclists and pedestrians both generally being slightly over counted. After classification the user can do a quick manual check on the bicyclists and pedestrians by viewing captured images of the objects sequentially. By providing this manual check the user not only gets an automated estimate, but a function to check that estimate in minutes. Though the program is far from perfect, the automated video analyzing and classification followed by quick manual checking significantly reduces the man hours required to get accurate counts.