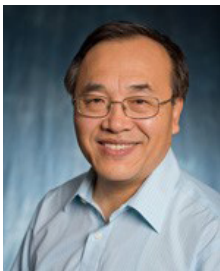**PROJECT TITLE:** Developing a cost-effective bus-to-pedestrian near-miss detection method using onboard video camera data
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Background

Public transit and pedestrian safety has gained increasing attention. Bus-to-pedestrian collisions often result in injuries, fatalities and insurance losses. For example, according to Washington State Transit Insurance Pool (WSTIP), a large portion of the collision-related transit losses are with pedestrians in Washington region. However, for the purpose of safety evaluation for a single region, a road segment, or an intersection, the total number of bus-to-pedestrian collisions is commonly not sufficient to support a significant statistical analysis on safety performance evaluation. Near-miss events, on the one hand, are conflicts that need sudden evasive action and has the potential to develop into collisions; on the other hand, they are not commonly recorded due to the lack of detection methods. Thus, developing a cost-effective method to collect near-miss data is necessary in order to identify high-risk locations, scenarios and behaviors thus countermeasures can be developed. Instead of deploying new devices for near-miss detection, which

would generate a lot of extra cost, making use of the existing devices is much more reasonable. To address the problems in bus-to-pedestrian near-miss detection, we are developing a cost-effective method in this project.

Research Project

The primary goal of the project is to develop a method that can detect bus-to-pedestrian near-miss events in order to support bus-to-pedestrian collision avoidance applications and provide additional data source for safety statistical analysis. Specifically, we will define indicators for near-miss events in videos taken by onboard front facing cameras, then develop a video processing framework to automatically detect and record near-misses. Given the fact that the northwest region has a large number of transit agencies and relies heavily on transit buses in terms of commuting, such near-miss detection method will definitely obtain additional information to enhance further research on bus-to-pedestrian safety studies in the region. Potentially, the proposed method can save cost for related agencies and improve both pedestrian and bus safety.