Using Computer Vision to Analyze Traffic

Santa Cruz, Aaron-James (School: Waipahu High School)

Purpose: In a world where the population is ever-increasing, optimizing transportation routes has become imperative. The following project aimed to create a more efficient method for analyzing traffic. Current methods in Hawaii include manually inputting data into a spreadsheet or expensive simulation-based software. Procedure: A computer vision program was developed to analyze traffic from video footage automatically. It was tested every morning for 10 minutes, tracking the flow of cars in a school parking lot. Results: The program identified efficiency issues in a school parking lot, pinpointing specific time intervals and causes. It gives insight into traffic flow patterns and shows the change when a solution is implemented. It had an accuracy rate of approximately 86% and, according to the Department of Transportation Head of Traffic, would decrease manual labor by over 80% when compared to current methods of analyzing traffic. Conclusion: The prototype demonstrated the potential of computer vision in enhancing traffic analysis processes. Improvements are needed to increase accuracy, analysis depth, and code efficiency. However, the project laid a foundation for future advancements in computer vision in traffic analysis.

Awards Won: