

Stabilizing String Stability of platoon of vehicle via Computer Vision technique.

Purpose: String Stability(SS) implies uniform boundedness of all the states of the interconnected system for all time if the initial states of the interconnected system are uniformly bounded[1]. SS is of much concern both in theory and practice that must be studied further for the public safety and the global issue of traffic congestion[2]. There is much of state-of-art mathematical methods presented earlier, but there is certainly lack of researches regarding application of SS in various of conditions. Furthermore, lots of the techniques proposed earlier utilizes Vehicle-to-Vehicle(V2V) systems which requires the use of communication systems such as radar. The system is certainly in question of mitigating reckless of communication disturbance and overhead. With the increasing computing power, I hereby propose novel String Stability research using Computer Vision(CV) and Machine Learning(ML) techniques. The state-of-art CV algorithm such as YOLO9000 can detect 9000 object categories by jointly optimizing detection and classification and YOLOv2 can run at more than 90 FPS[3], which suffice the real-time object detection and tracking problem using only one central drone camera. This approach also introduce the elimination of V2V delays and overhead by minimizing the usage of communication channels.