

Autonomous Systems LAB (Pritish Samant)

Scenario

The lead truck will be maneuvered manually. The rest of the trucks are connected via a V2V wireless system. The lead truck will have control of all the other trucks as well. If the lead truck brakes then the action would be transmitted wirelessly to other trucks and others will brake as well. And as soon as the lead truck lifts the brake pedal, others will start speeding up and match the lead truck's speed. Such a set of vehicles will drive in the platoon. In case of allowing some other vehicle to cross through between platoon, the respective truck driver can manually control the vehicle and slow down the vehicle which further will make the trucks behind slowing truck slow down. This points out that, the following trucks are not only controlled by the lead truck but can also be driven manually in case of such situations. The point also to be considered is that every following truck in the platoon records the speed of the truck ahead and matches it. Which can also be controlled by a lead truck.

Requirements

- wireless connection between trucks
- V2V communication unit
- Hardware
- Sensors
- Artificial intelligence

Timing behaviour

- always maintains a safe distance between trucks such that always a gap of 3-5 seconds between vehicles. In case of any malfunction, the driver has the time to control the vehicle manually.
- Would need a strong communication system. At least 5g connection.
- Communication should be done in milliseconds. The speed of the connection is of utmost importance.
- Lightweight software with embedded hardware should be considered to increase the response time. Compatibility is important.