

TJA2

CSE 435

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## Group HW2: Collated Requirements

### Requirements:

1. The system will require the driver to set a maximum speed and change target distance before engaging Traffic Jam Assist
  - a. The vehicle will not surpass the speed limit set by the driver at any time
  - b. The maximum speed needs to be set up every time the TJA is enabled
2. The system shall allow the driver to deactivate Traffic Jam Assist by pressing the cancel/OK button in the steering wheel, or by braking. Upon deactivation, the driver will have to be aware of traffic ahead.
3. The Traffic Jam Assist System shall only work if the driver is engaged. The system must only work if it detects contact in the steering wheel at all times.
  - a. If the driver is not engaged(not in contact with the steering wheel) the vehicle will alert the driver on the console until hands are in the steering wheel. After a certain amount of time the TJA will alert the driver and shut off.
4. If the vehicle has a front camera, when activated, TJA will keep the vehicle centered in the lane.
  - a. If the vehicle drifts to the side, the vehicle will alert the driver on the console and TJA will center the vehicle by manipulating the steering wheel.
  - b. TJA will not manipulate the vehicle if turning lights are on.
5. Complete stop behind target vehicle in case of slow or stopped traffic
6. Start vehicle back up when stopped traffic resumes, at set speed and distance
7. Provide status and enable/disable alerts for vehicles when TJA is active.
8. Radar to detect and track vehicle, distance, and speed

### Global Invariant Requirements:

1. When TJA is enabled, the vehicle never surpasses the maximum speed set by the driver.
2. The system shall always deactivate when breaking and pressing "OFF" button.
3. The system should not accelerate if the measured distance between the driver and vehicle ahead is below the selected following distance.
4. The driver inputs are primary, meaning they override any TJA controls and inputs.
5. Vehicle will maintain speed until another vehicle is detected

6. Forward looking radar will identify a target and determine closing rate
7. If the vehicle gets too close to the target in front of it, it will slow down and maintain a set distance

Questions for customer:

1. If the vehicle is driving at high speeds on the highway and the vehicle in front suddenly brakes what should TJA do?
2. If a collision on the highway is imminent what should the system do?
3. What happens if a vehicles engine shuts you off, but the electronic system is still on? How should TJA behave?
4. What is the sensor set given to us and what if one of them (radar or sensor) fails? Will there be a fallback to other forms of sensors or will TJA just be deactivated?
5. What are, if any, legal specifications/regulations that are important and must be honored?
6. How close is too close?
7. What is the difference between the three distances?
8. How strong is the lane stay assistance?