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CPE 4400

LED Ideas

**Proposition 1:** Use LED’s inside vehicle to show traffic signal status of upcoming signals. Utilizing both individually-addressable LED’s and a Hex Text Display, the system could obtain traffic signal data from nearby RSU’s to visually show the traffic signal state of an upcoming light before the driver is physically able to see it. This would be paired with a Hex display to show which intersection’s traffic lights are being shown.

Potential useful applications could be to make navigation more efficient and safer for drivers, potentially reducing the chance of drivers running through a light due to obstructions blocking line-of-sight of the actual traffic signal light.

**Proposition 2:** Utilize LED’s to indicate that a driver is driving over the speed limit inside the vehicle. By changing the color of the LED based on how fast the driver is going compared to the general flow of traffic, it would let the driver know if they are going too slow/too fast compared to the general flow of traffic around them.

**Proposition 3:** Stop Sign LED’s

**Proposition 4:** Internal LED’s indicating other vehicle’s intent to switch lanes. By utilizing LED’s inside the vehicle that obtain data from other vehicle’s, common accident-prone situations such as two vehicles switching into the same lane could possibly be prevented as when one vehicle indicates to switch over to an adjacent lane, the vehicles around them could be notified via the internal LED’s so that the driver does not also switch to that lane temporarily.

General Bill of Materials:

OwlBox

Arduino Microcontroller (ESP 32 for Wireless connectivity)

WS2812B Individually Addressable LED’s

Adjustable Power Supply (5V for LED’s, 3.3V for ESP32, 5V for other Arduino devices such as Arduino Nano)

General Electrical Wires, Solder, Flux, heat shrink, etc.

Spreadsheet for Proposition #3

Spreadsheet for Bill of Materials

Schematic for Connections