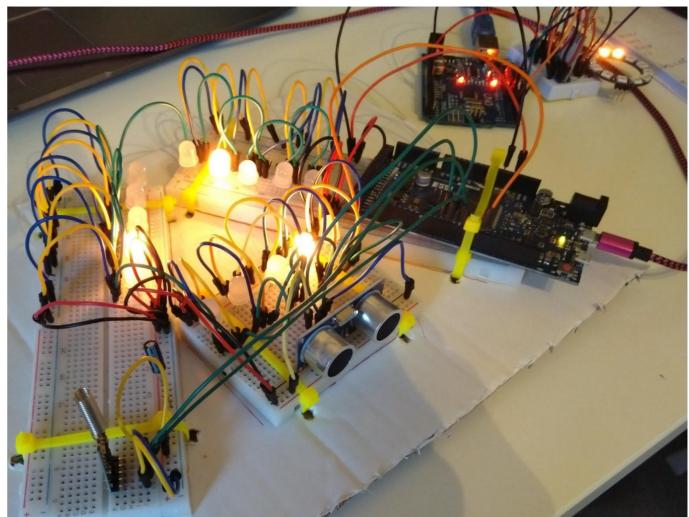# Interactieve Gevarendriehoek
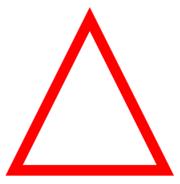
WS2812, HC-SR04 and HC-12 library

This project is for when you have a car breakdown, and you need to set out a warning triangle. The one I made, has an animation. When a car gets near, the triangle lights up red, and the lights on the circle on the other Arduino get more intense. The distance is send via a rf communication chip, to the second Arduino.

This is the code for my implementation for the WS2812 LED. The interesting part is that I couldn't use a third for loop to send every bit, because for-loops are to inconsistent. Therefore I had to do the same instructions 8 times.

I also couldn't use if-statements to set the pins low, because apparently the took to much time too.

I wrote the implementation for the Arduino Uno and the Arduino Due.

```cpp
void neopixel_due::flush()
{
    for (uint8_t i = 0; i < n_leds; i++)
    {
        for (uint8_t j = 0; j < 3; j++)
        {
            PIOC->PIO_SODR = 0x400000;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop
            PIOC->PIO_CODR = (((leds[i][j] & 0x80) && 0x80) ^ 1) << 22;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop
            PIOC->PIO_CODR = 0x400000;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop

            PIOC->PIO_SODR = 0x400000;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop
            PIOC->PIO_CODR = (((leds[i][j] & 0x40) && 0x40) ^ 1) << 22;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop
            PIOC->PIO_CODR = 0x400000;
            __asm__("nop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop\n\tnop
```


This project uses the following chips:

- Cheap PL9823 LEDs
- A WS2812 12 led ring
- An HC-SR04 ultrasone chip
- 2 HC-12 rf communication chips

Sander Boot 2019

github.com/sanderBoot0/IPASS