Real-time Multi Sensor Logger

MAURO DE BRUYN

Overzicht

- Materialen
- Werkwijze
- Resultaten
- Reflectie
- Demo

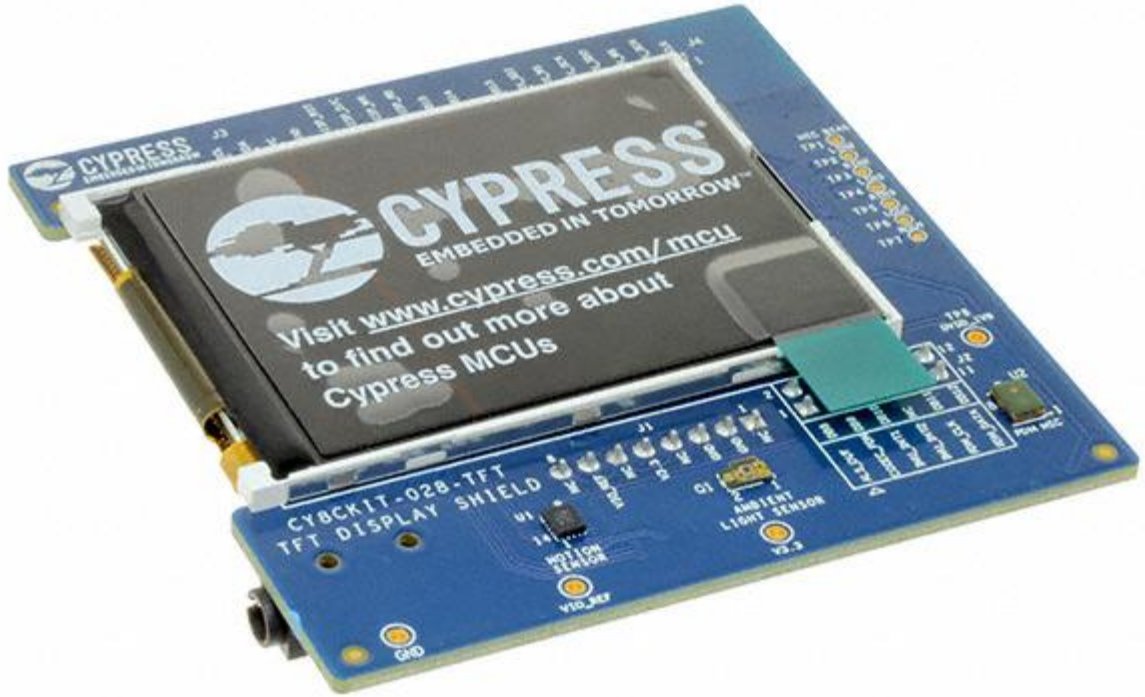
Hardware

- Infineon PSoC 6 Wi-Fi BT Pioneer Kit (CY8CKIT-062-WiFi-BT)
- QSPI Flash
- Kitprog
- Arduino compatible headers

Hardware

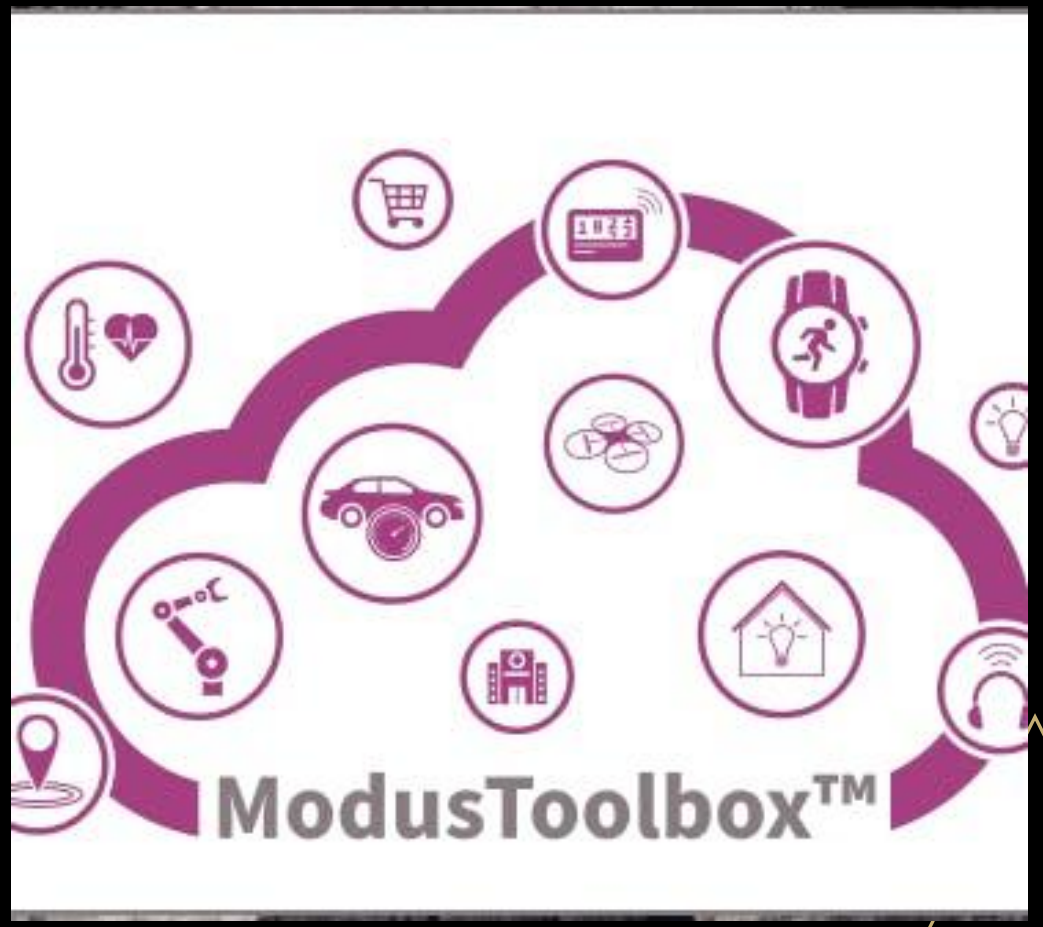
Display & sensor shield

- 2.4 TFT display
- IMU
- ALS
- PDM
- Audio codec
- I²C
- Arduino headers



Software

- ModusToolbox
- BSP
- Middelware (hal, wifi, pdl)
- Project creation/management



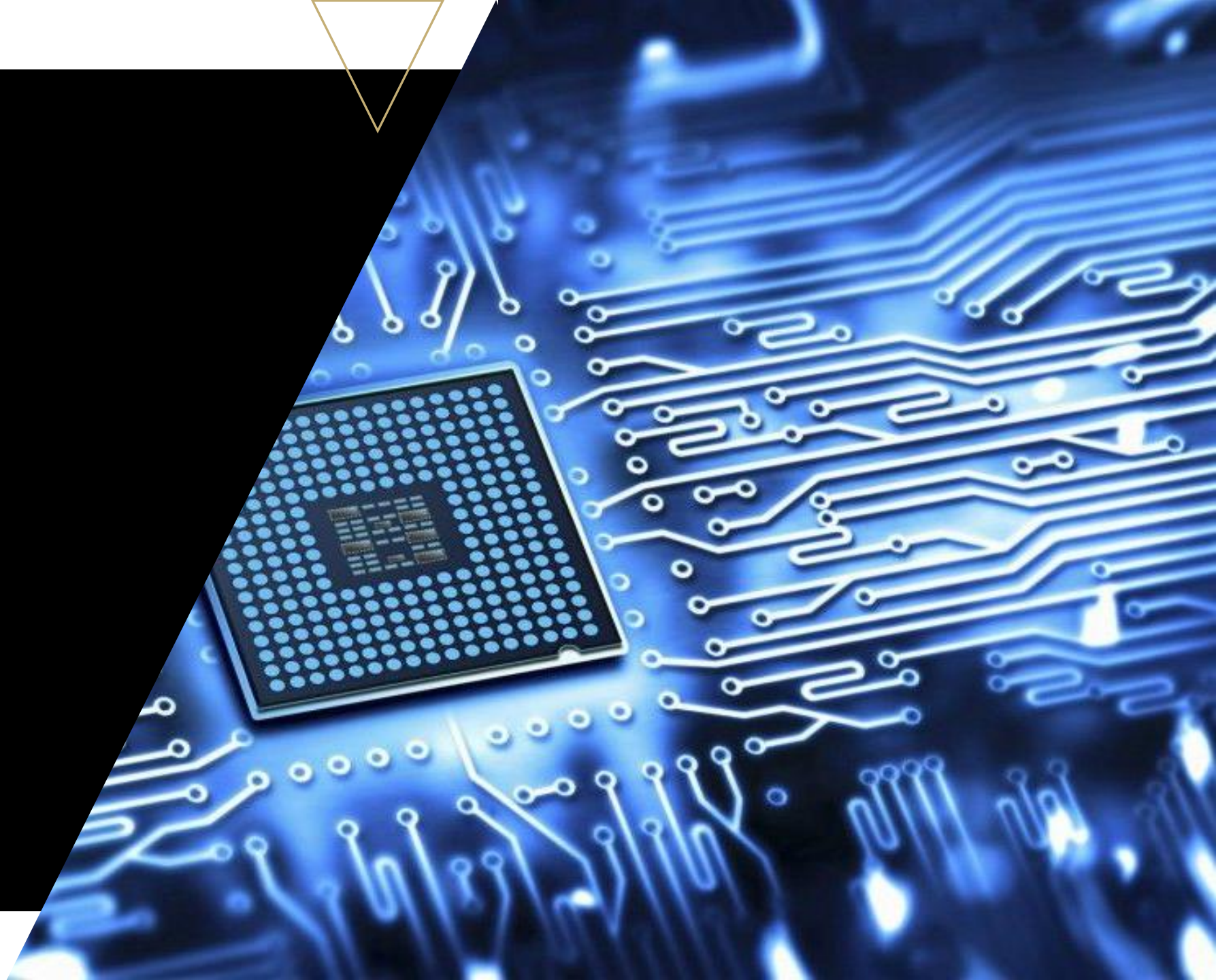
Software

Cloud backend

- Realtime database
- Google
- Hosting
- Firebase
- JSON
- HTTPS

Firmware

- Hal Drivers
  - ADC
  - I²C
  - GPIO
  - RTC



Werkwijze

- Deelopdrachten
- Combineren en uitbreiden
- ALS ➔ ADC
- IMU ➔ I²C
- Time stamping
- Periodic cloud upload
- Local UI
- Local fallback memory

```
  delay(10);
  digitalWrite(BRAKE_PIN, HIGH);
}

digitalWrite(DIR_PIN, sp >= 0 ? HIGH : LOW);
uint8_t pwmVal = constrain(abs(sp), 0, 255);
if (pwmVal < 10) pwmVal = 0; // Motor niet active
pwmSet(PWM_CH, pwmVal);

lastDirection = newDirection;


void setup() {
Serial.begin(115200);
Wire.begin();

pinMode(DIR_PIN, OUTPUT);
pinMode(BRAKE_PIN, OUTPUT);
digitalWrite(BRAKE_PIN, LOW);

ledcSetup(PWM_CH, PWM_FREQ, PWM_RES
ledcAttachPin(PWM_PIN, PWM_CH);

if (!mpu.begin()) {
  Serial.println("MPU6050 niet
  while (1);
}

mpu.setAccelerometerRange(MP
mpu.setGyroRange(MPU6050_RA
mpu.setFilterBandwidth(MPU

prevTime = millis();
Motor1_control(0);


void loop() {
sensors_event_t a,
mpu.getEvent(&a, &
```

Resultaten

- HTTPS
  - Firebase
- IMU reading
- RTC value
- Status indication

Discussie (Issues)

- Coding platform

Demo