Sending Data Across a CAN Bus:

By Noah Huber

The Team

As a great philosopher once said, “Perchance”

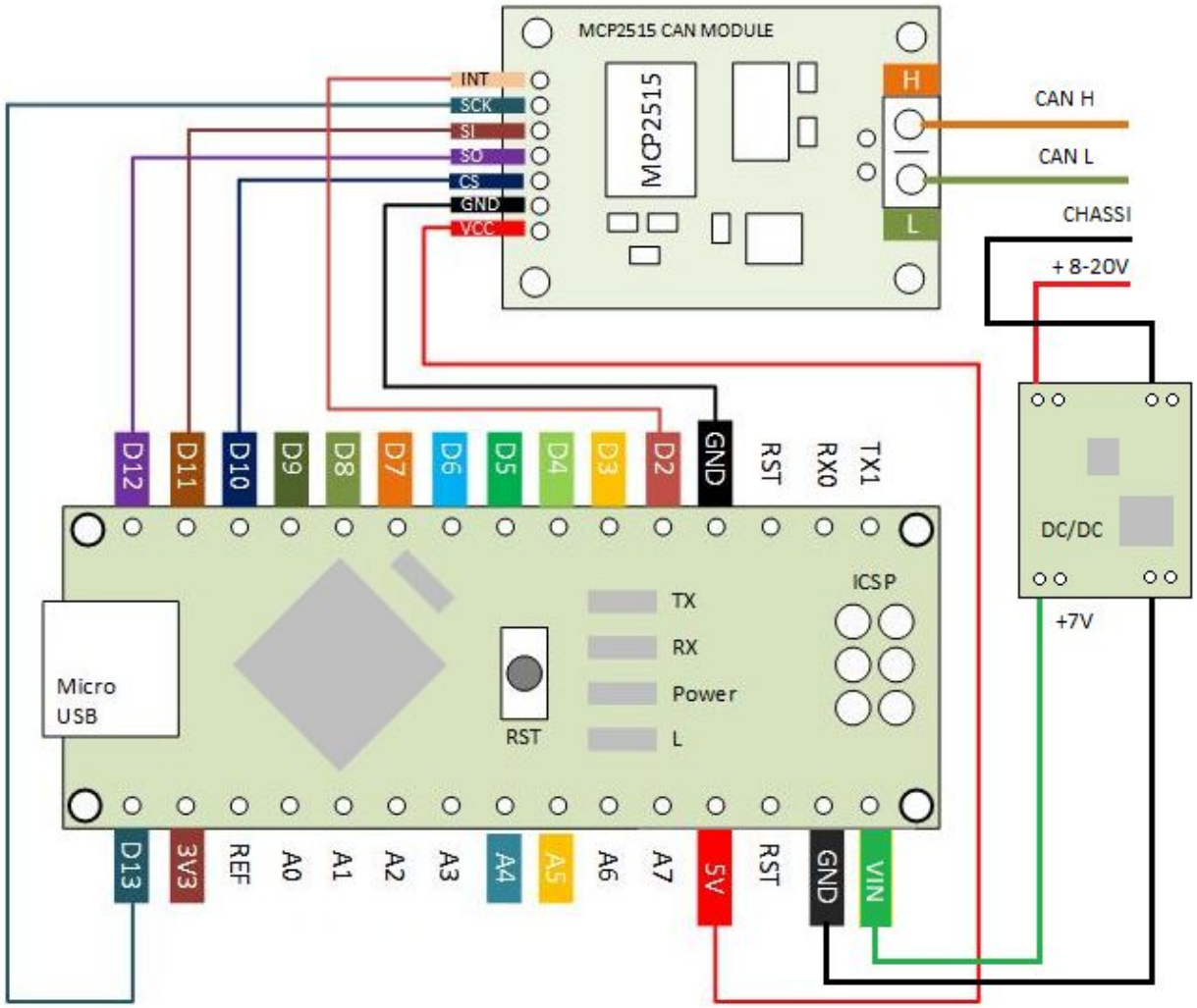
Noah

Lead software developer
project designer, engineer,
electrician, team leader
and emotional support
council member.

CAN Bus

The Controller Area Network (CAN Bus) is a communication protocol widely used in the automotive industry and industrial applications. It enables multiple electronic control units (ECUs) to communicate with each other over a two-wire network, facilitating real-time data exchange with high reliability and fault tolerance.

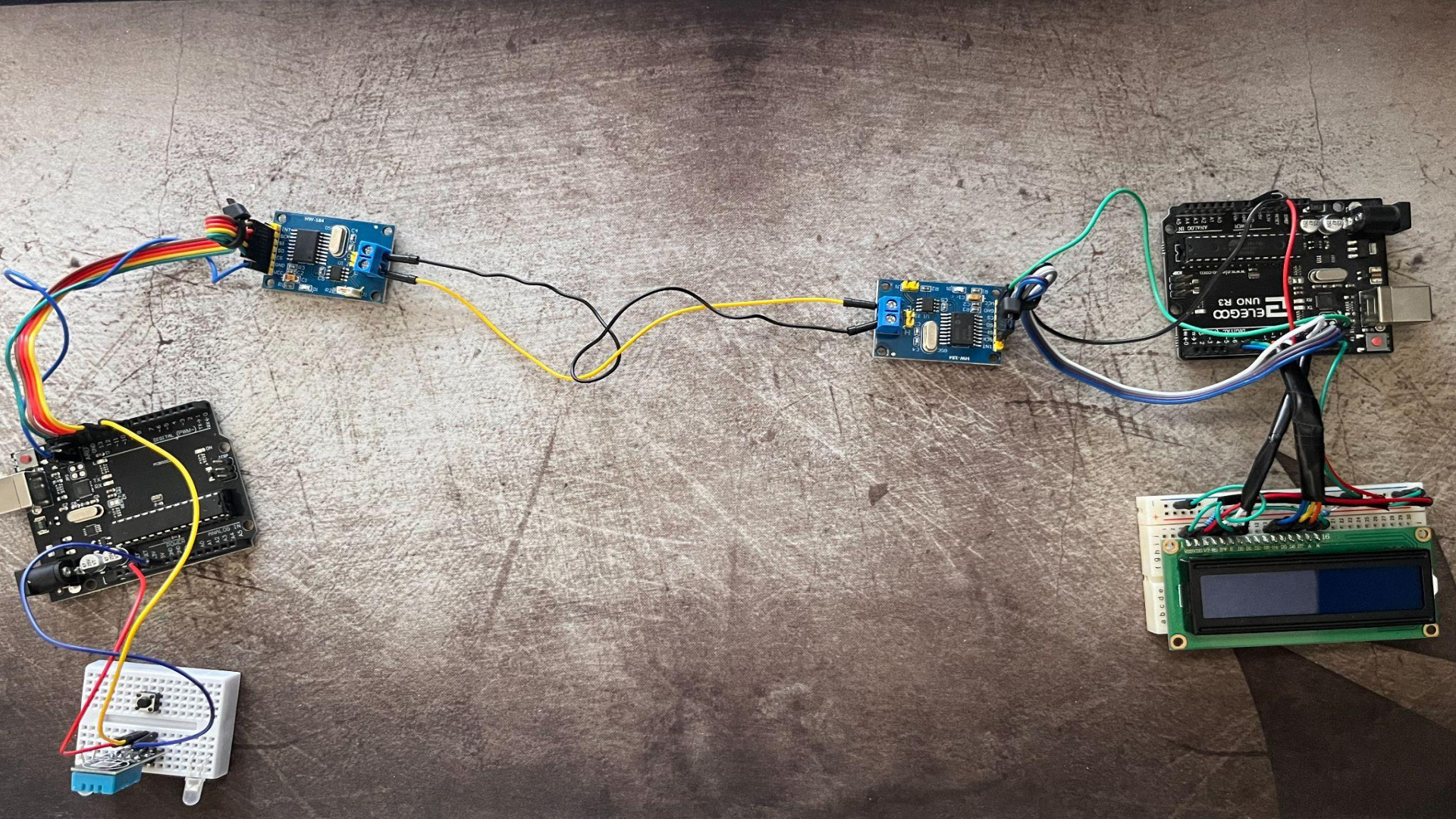
CAN Bus can be used to send data and stream live feeds to many ECUs. The CAN Bus can generate flags or errors that can stop the process.


MCP2515 CAN MODULE
INT
SCK
SI
SO
CS
GND
VCC
MCP2515
H
L
CAN H
CAN L
CHASSI
+ 8-20V
DC/DC
+7V
D12
D11
D10
D9
D8
D7
D6
D5
D4
D3
D2
GND
RST
RX0
TX1
ICSP
TX
RX
Power
L
Micro
USB
RST
D13
3V3
REF
A0
A1
A2
A3
A4
A5
A6
A7
5V
RST
GND
VIN

Components

There are many components that can be used to iterate a CAN Bus network. However, there a few main parts.

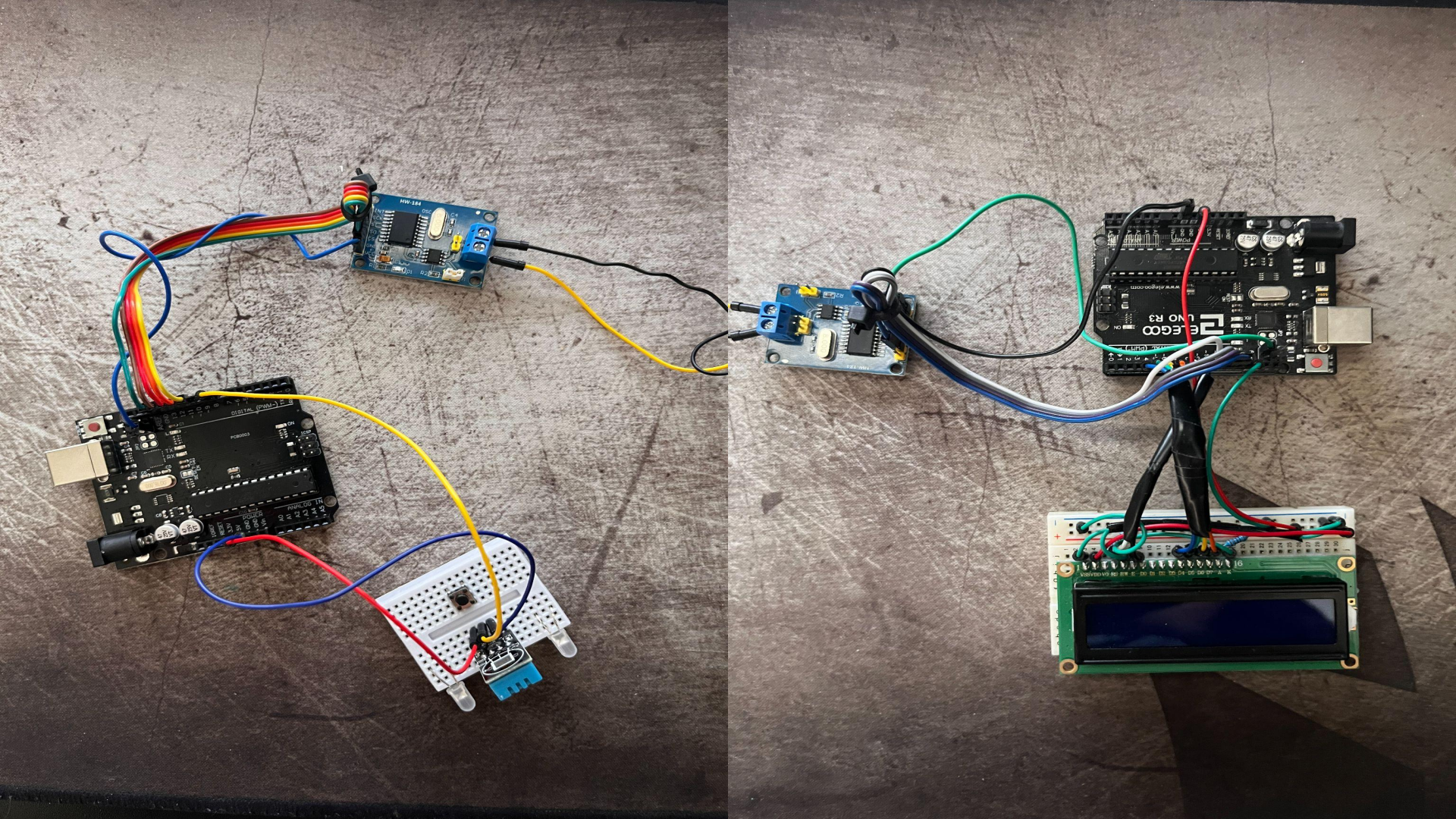
- Main Processing Board
- CAN Bus Board
- Bread Boards or Break Out Boards
- A LCD Screen or Panel
- Sensors
- Misc. Wiring and Resistors.



Components

The main components used for my iteration are:

- Two Arduino Uno R3s
- Two HW-184 or MCP2515 CAN Bus Boards
- Two Bread Boards
- LCD Liquid Crystal Display
- DHT 11 Temperature and Humidity Sensor
- Wiring, Connections, and Resistors.


HW-184
DIGITAL (PWM~)
ANALOG IN
POWER
UNO R3

Software:

There are many differents softwares, libraries, APIs, and programming languages that can be used to setup a CAN Bus network. The software used are, MCP2515 library by autowp, DHT sensor library by adafruit, and the arduino IDE

Challenges:

Hardcoded Libraries

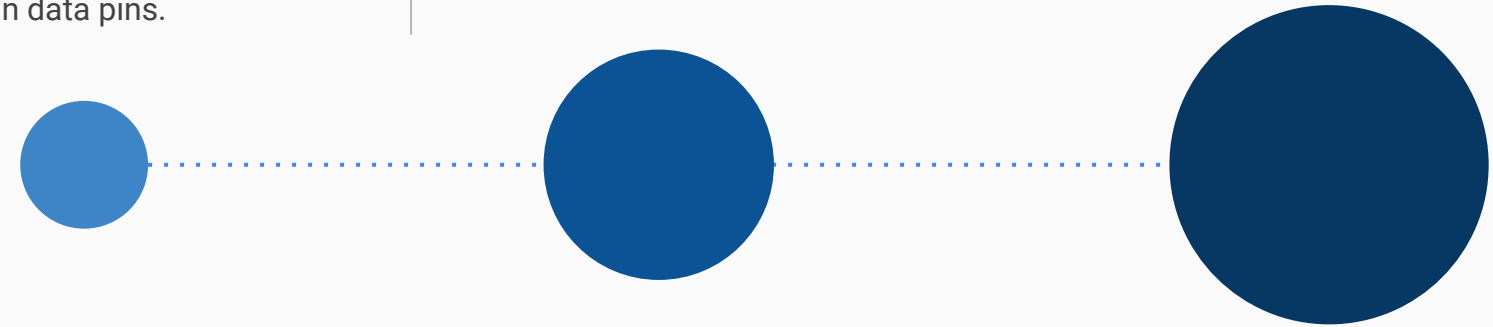
The library I used for the MCP2515 was hardcoded to certain data pins.

Finding Repository

Finding a repository that used the MCP2515 board without incorporating a Interrupt Pin

Discovering Bad CAN Board

After programming until 1 am I finally discovered the CAN Bus board I was using went bad.




Lesson Learned:

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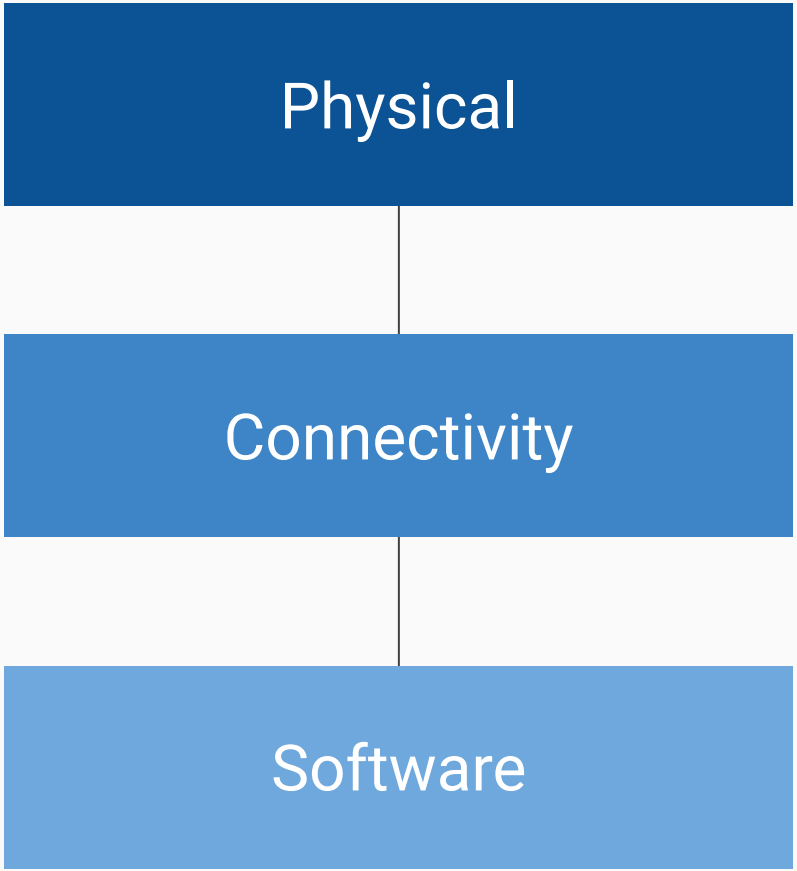
There is always a process to discover, solve, and overcome challenges. Start with the physical hardware working your way towards the abstract. If something is not working with the software it might be the hardware.



What Now?