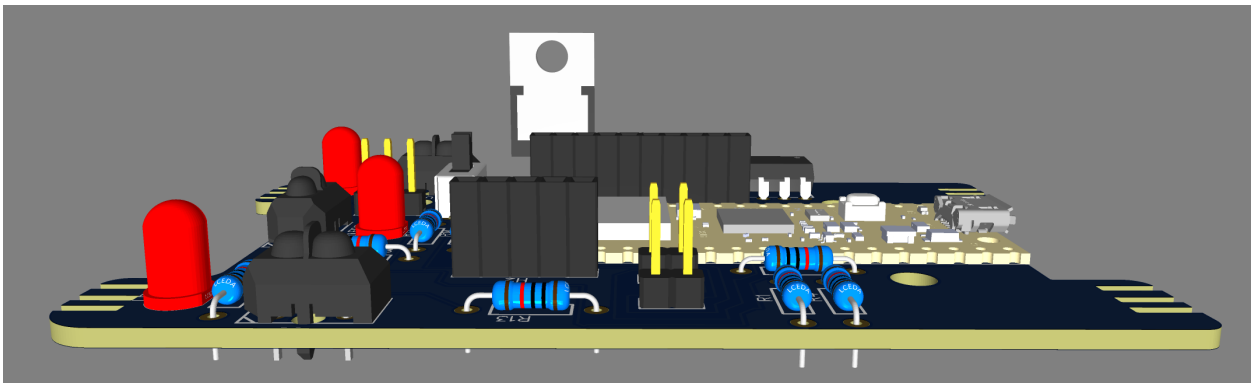
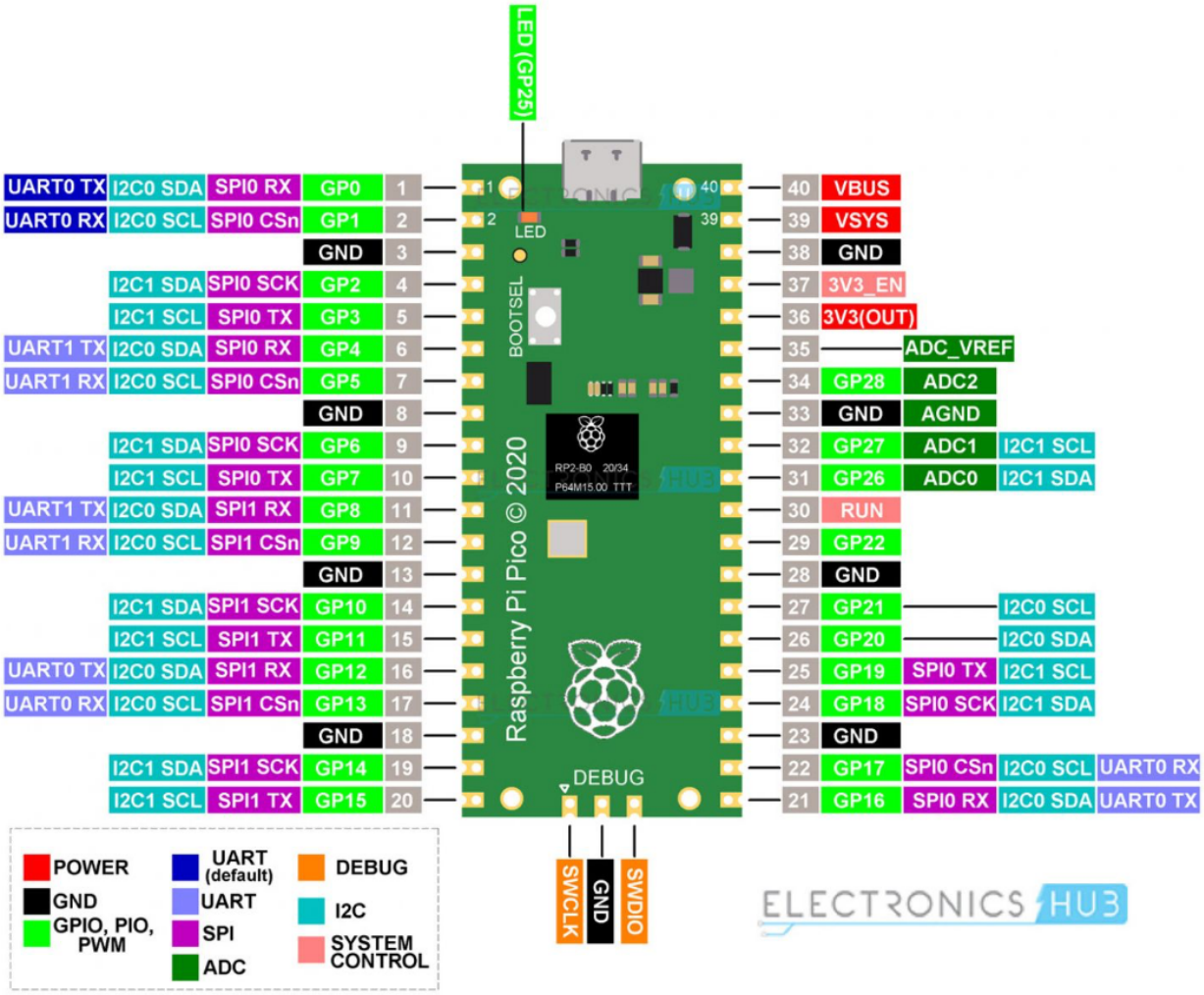


Workshop 1 - Build a Robot

Thursday 26th September

Today we learned how to connect a Pi Pico (micro controller) to a few components such as the TCRT5000 ir sensor (infrared) , L7805 Linear voltage regulator and a L293D H bridge via the bread board.

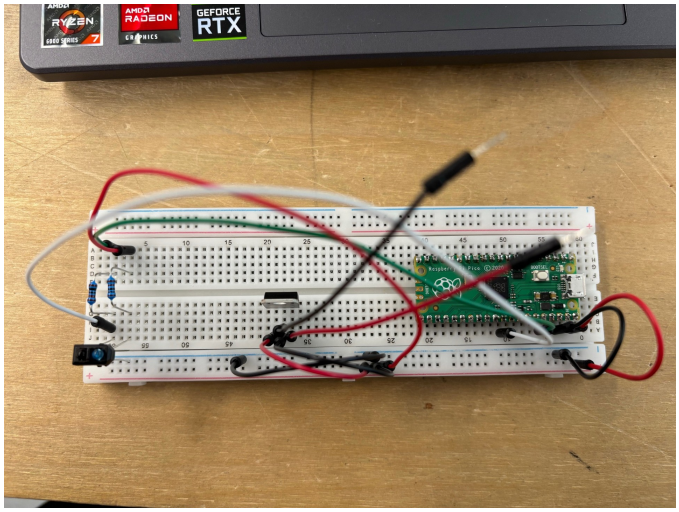


Utilising the arduino IDE we tested the Pi Pico after installing a core made by Earl Philhower

https://github.com/earlephilhower/arduino-pico/releases/download/global/package_rp2040_index.json

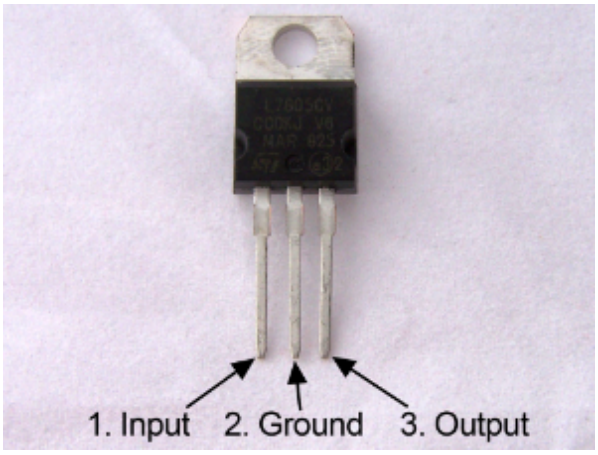
First we did a basic test to make the led on the Pico flash. Then we setup the linear voltage regulator to ensure the Pico always received 5 volts even if higher amounts were initially sent to it. And finally we setup the ir sensor and had it output to the serial monitor, this way we could see the numerical change and graphed those numbers in real time.

https://prod-files-secure.s3.us-west-2.amazonaws.com/6d327d71-a800-4bb7-a305-2462de459e8c/dc5a5b70-5988-48d9-8b37-66a5bb072acc/Video.mov

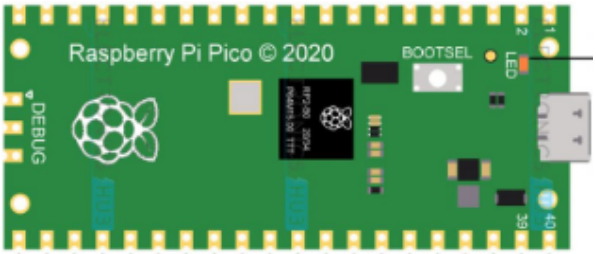


Memorable Component info

1. While the Arduino uno has an onboard voltage regulator the Pi Pico does not. This is why we use the L7805 voltage regulator to ensure the Pico only get the required 5V and no higher.

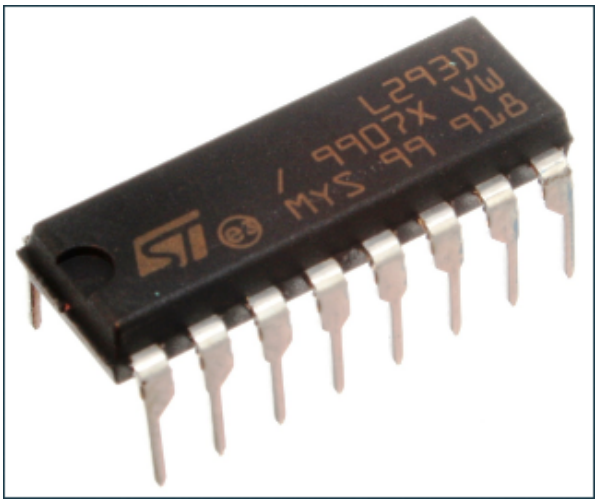


1. The Pi Pico has 26 multifunction GPIO pins out of 40.



1. The TCRT5000 contains both a Infra-red light emitting diode and an infra-red light dependant resistor.

1. The L293D chip is a compact full H-bridge that can drive 2 motors bidirectionally. It can handle up to 1.2Amps of current and 36V



Data Sheets

pico-datasheet.pdf

tcrt5000.pdf

l7805cv-26904430.pdf

l293d-1849134.pdf

workshop info

COMP207-W1-WKSP-BUILD_A_ROBOT-1.pdf