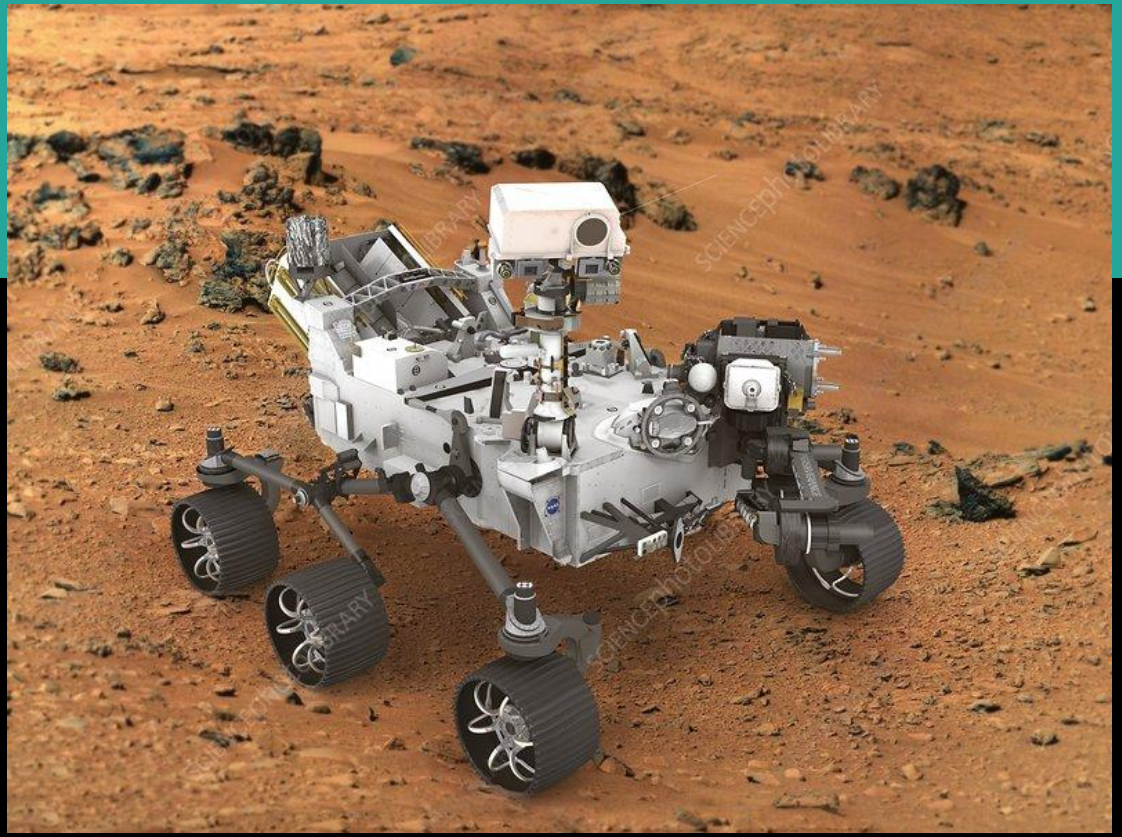
Jbot

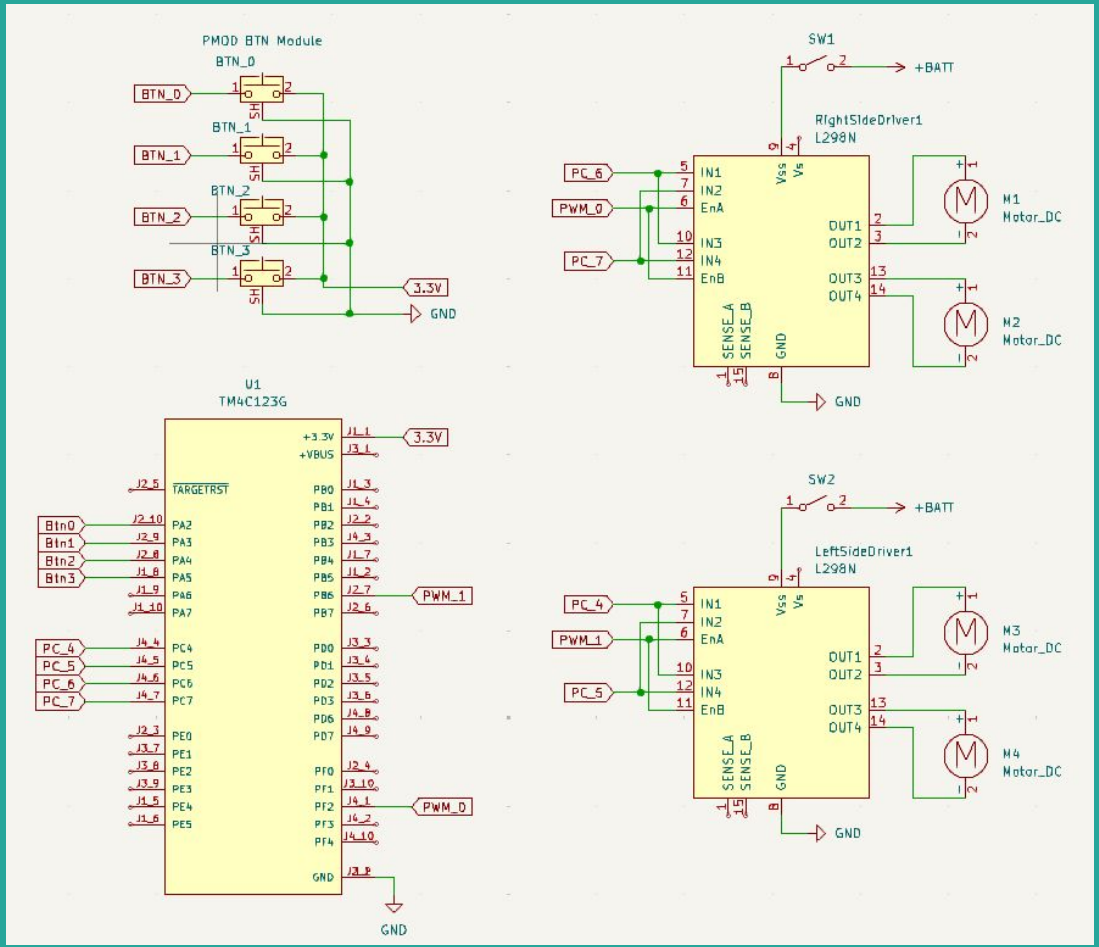
By: Jonathan’s



Introduction

- Idea
  - RC
  - Drive path
    - Forward
    - Reverse
    - Square
    - Triangle
- Main goal
  - Drive path

Full schematic

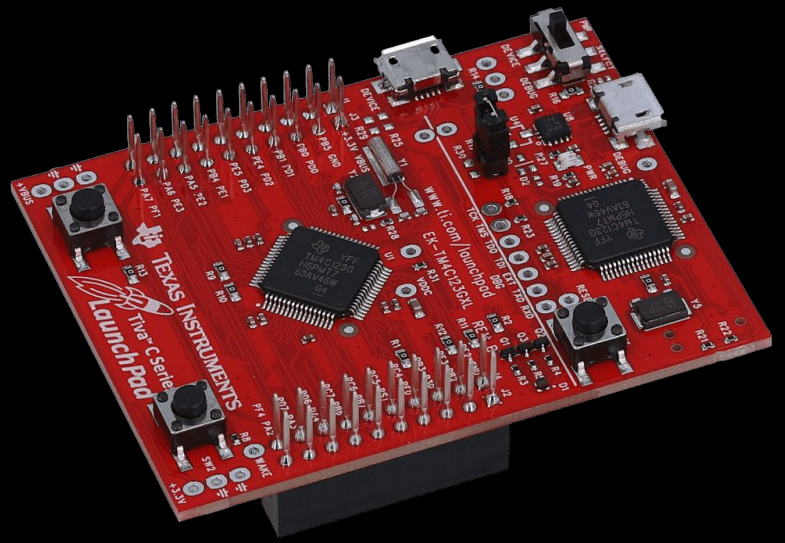


Software

- Keil v5
  - Main
    - Main.c
  - SRC (C files)
    - SYSTICK.c
    - TIMER_0A_INTERUPT.c
    - GPIO.c
    - PWM0_0.c
    - PWM0_1.c
    - PMOD_BTN_INTERUPT.c
  - INC (header files)
    - SYSTICK.h
    - TIMER_0A_INTERUPT.h
    - GPIO.h
    - PWM0_0.h
    - PWM0_1.h
    - PMOD_BTN_INTERUPT.h

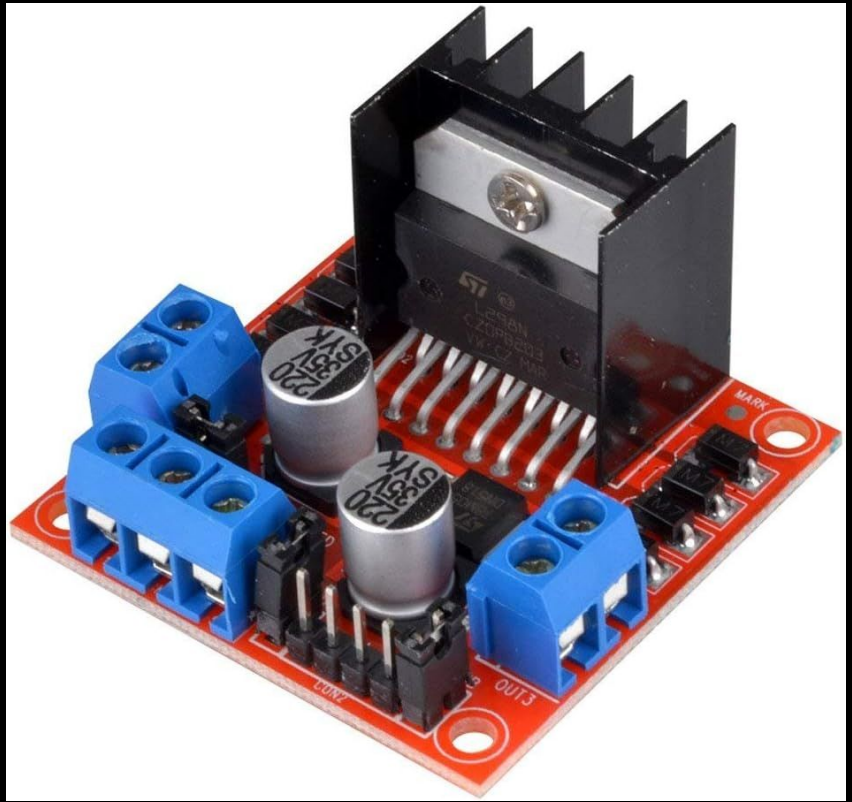
Main hardware

- Tiva C Series TM4C123G
  - GPIO
    - Motor driver
    - Pmod
  - PWM
    - Duty cycle
      - Motors
  - Systick
    - Delays
  - Interrupts
    - Pmod



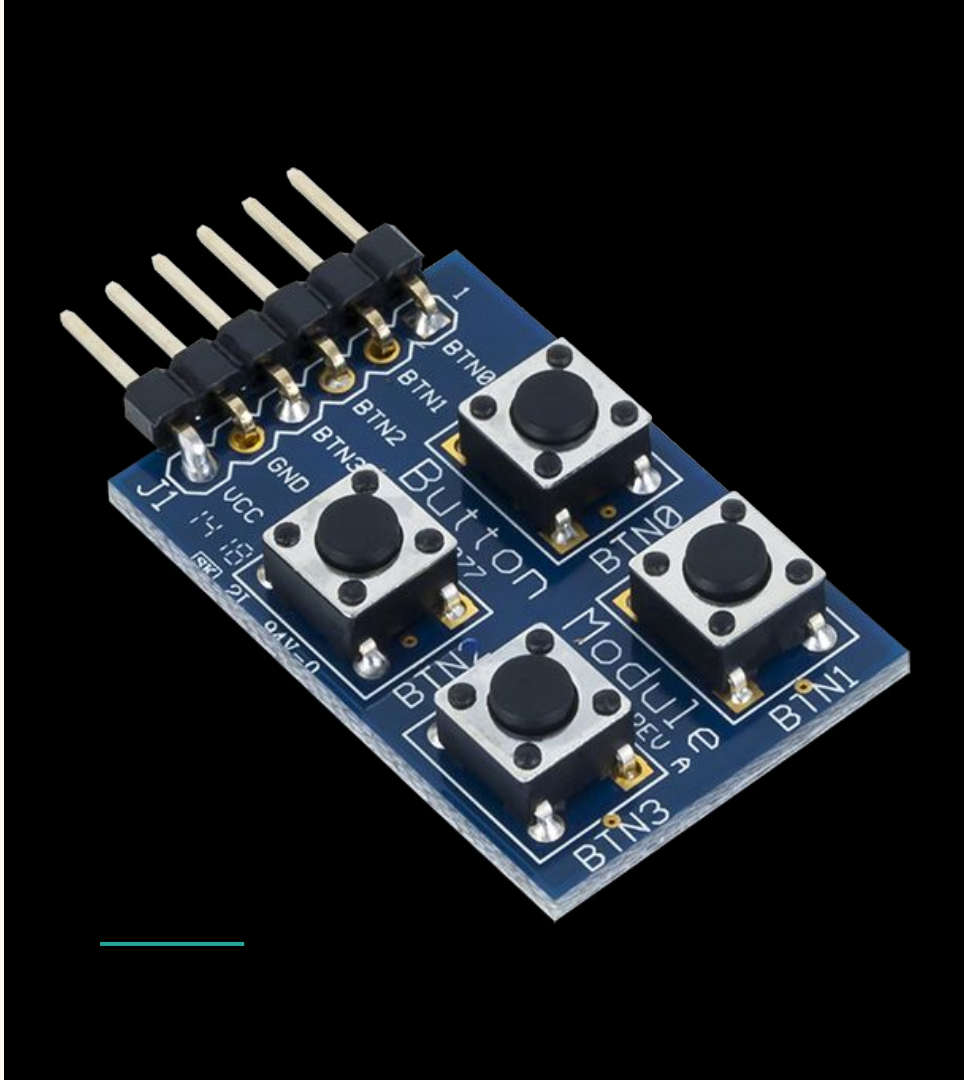
Main hardware

- HiLetgo L298N Motor Driver
  - H Bridge
  - Pwm
  - 9V
  - Geared DC Motors



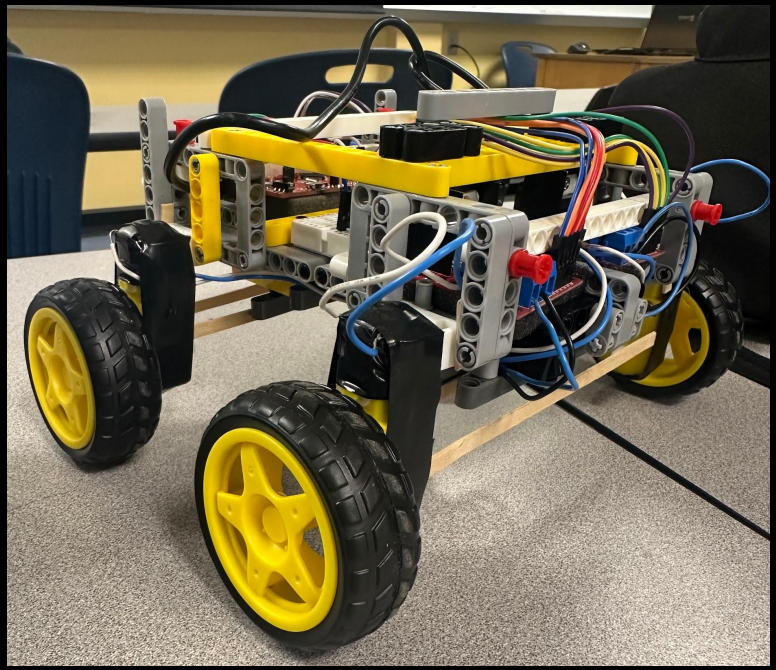
Main hardware

- PMOD BTN Module
  - PMOD handler
    - Case 1 (BTN_0)
      - Forward
    - Case 2 (BTN_1)
      - Reverse
    - Case 3 (BTN_2)
      - Square path
    - Case 4 (BTN_3)
      - Triangle



Results

- Final design
  - Forward
  - Reverse
  - Square
  - Triangle
  - SPAZZZ



Forward

Forward motion

Reverse

Reverse motion

Square

Square motion

Triangle

Triangle motion

Random Path(SPAZZ)

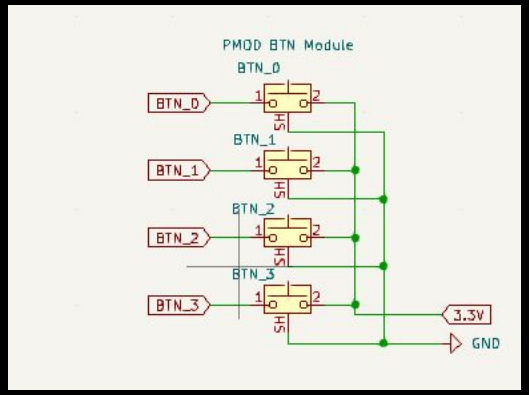
Random motion(spazz)

Possible improvements

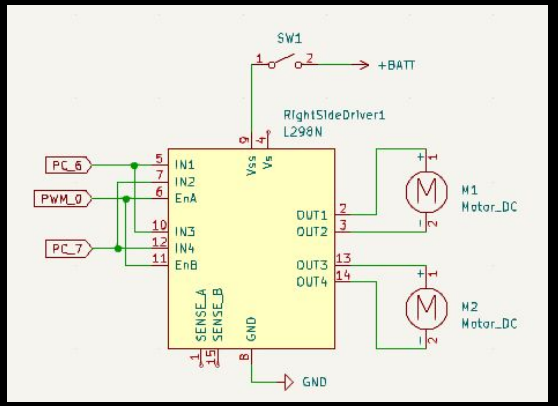
- Rc
- Servo turning
- Better power management
- Independent PWM signal per motor

Component list

Description	Quantity	Manufacture
Tiva C series TM4C123G launchpad	1	Texas instrument
USB-A to Micro-USB cable	1	N/A
PMOD BTN Module	1	Digilent
Geared DC Motors	4	Gibildet
L298N dual DC motor driver	2	HiLetgo
Tires	4	Gibildet
9v battery	2	N/A
9v battery hardness	2	N/A
Lego Technic	1	Lego
Switches	2	N/A
Bread board	1	N/A



Pinout diagram lists



PMOD BTN Module	
TM4C123G Launchpad	Pin purpose
PA2	BTN_0
PA3	BTN_1
PA4	BTN_2
PA5	BTN_3
VCC (3.3V)	VCC
GND	GND

L298N dual DC motor drivers	
TM4C123G Launchpad	Pin purpose
PC4	Input 1,3 Driver L
PC5	Input 2,4 Driver L
PC6	Input 1,3 Driver R
PC7	Input 2,4 Driver R
PB6	PWM_0
PF2	PWM_1

Conclusion