E1.08 - Magnetronics

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Ingram School of Engineering

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Project Overview

The AutoBot is an autonomous vehicle that is designed to navigate street course using onboard processing without human control or intervention.

D1 Requirements

- Start button and indicator
- Basic street navigation.
- Lane, traffic light, and stop sign detection.
- Elapsed time display
- Chassis PCB design ready for order

D1 Accomplishments

- PWM motor control Processing stages run 15-17 ms with a capture rate of ~15 FPS.
- Start button with countdown and elapsed-time display.
- I2C bus and battery voltage monitoring

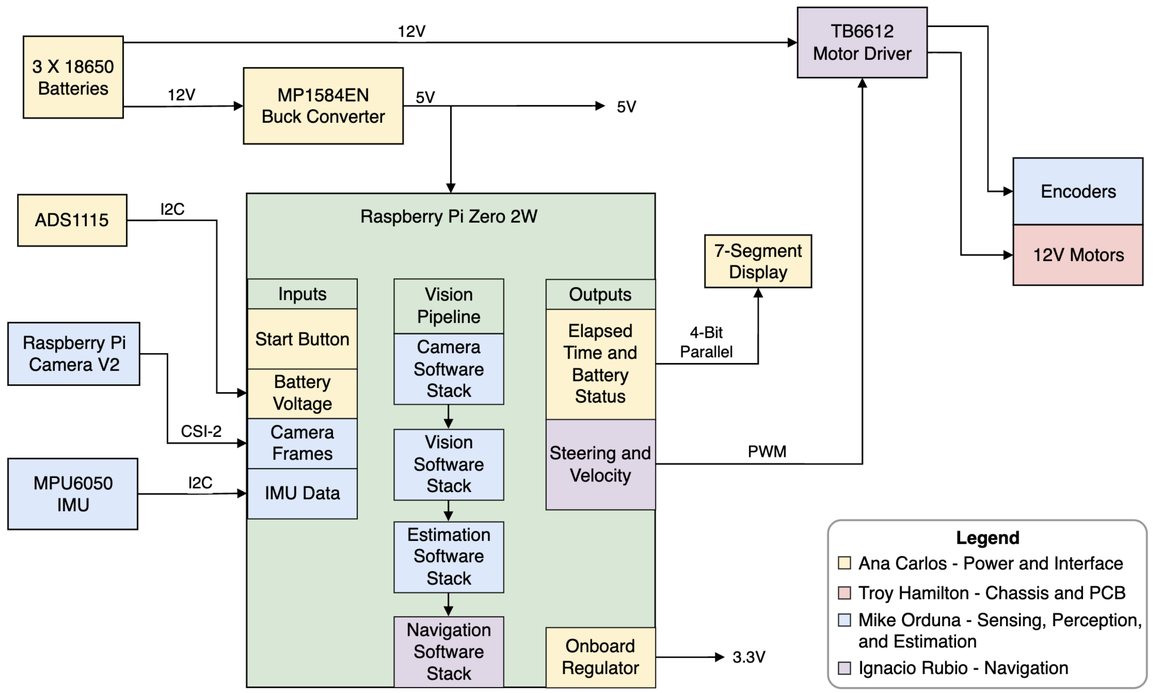
D2 Plan

- Develop perception data for traffic ligths and stop sign, and translate the data for motor commands
- PCB completed
- Testing every subsystem

Acknowledgements

Sponsor: Texas State University, Mr. Mark Welker
Faculty Advisor: Mr. Jeff Stevens
D2 Mentor Team: E2.12 KongBot

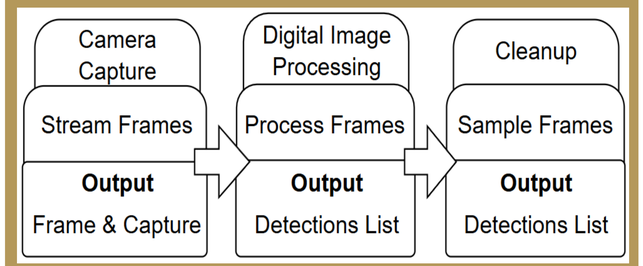
Top Level Diagram



Team

Ignacio Rubio | Ana Carlos | Mike Orduña | Troy Hamilton

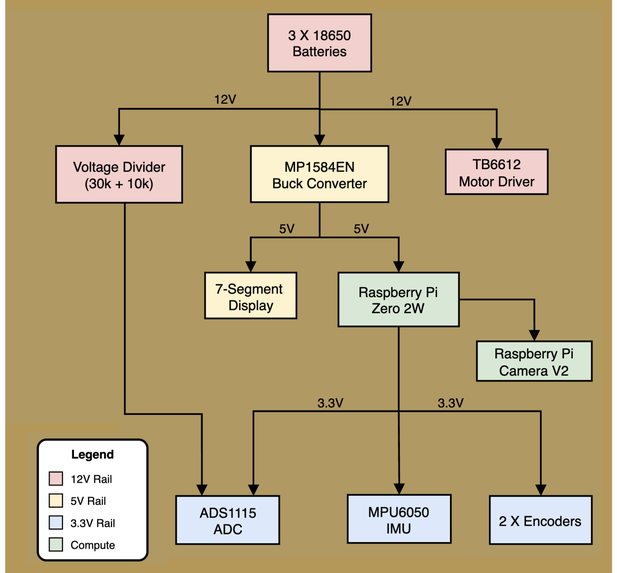
Vision Pipeline



Bill of Materials

Component	Quantity	Price Each	Subtotal Cost
Raspberry Pi Zero 2 W	1	$18.00	$18.00
Raspberry Pi Camera V2	1	$15.00	$15.00
N20 12v Motor w/ Encoders	2	$11.99	$23.99
7-Segment Display	1	$3.50	$3.50
ADS 1115 Converter	1	$3.96	$3.96
MPU6050 IMU	1	$2.62	$2.62
MP1584EN Buck Converter	1	$1.25	$1.25
TB6612FNG Motor Driver	1	$5.95	$5.95
Button Module	1	$1.59	$1.59
SD Card	1	$14.71	$14.71
		Total Unit Cost	$90.58

Power



Navigation