CPE 301 Project Presentation

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AIM & ACCOMPLISHMENT

AIM:

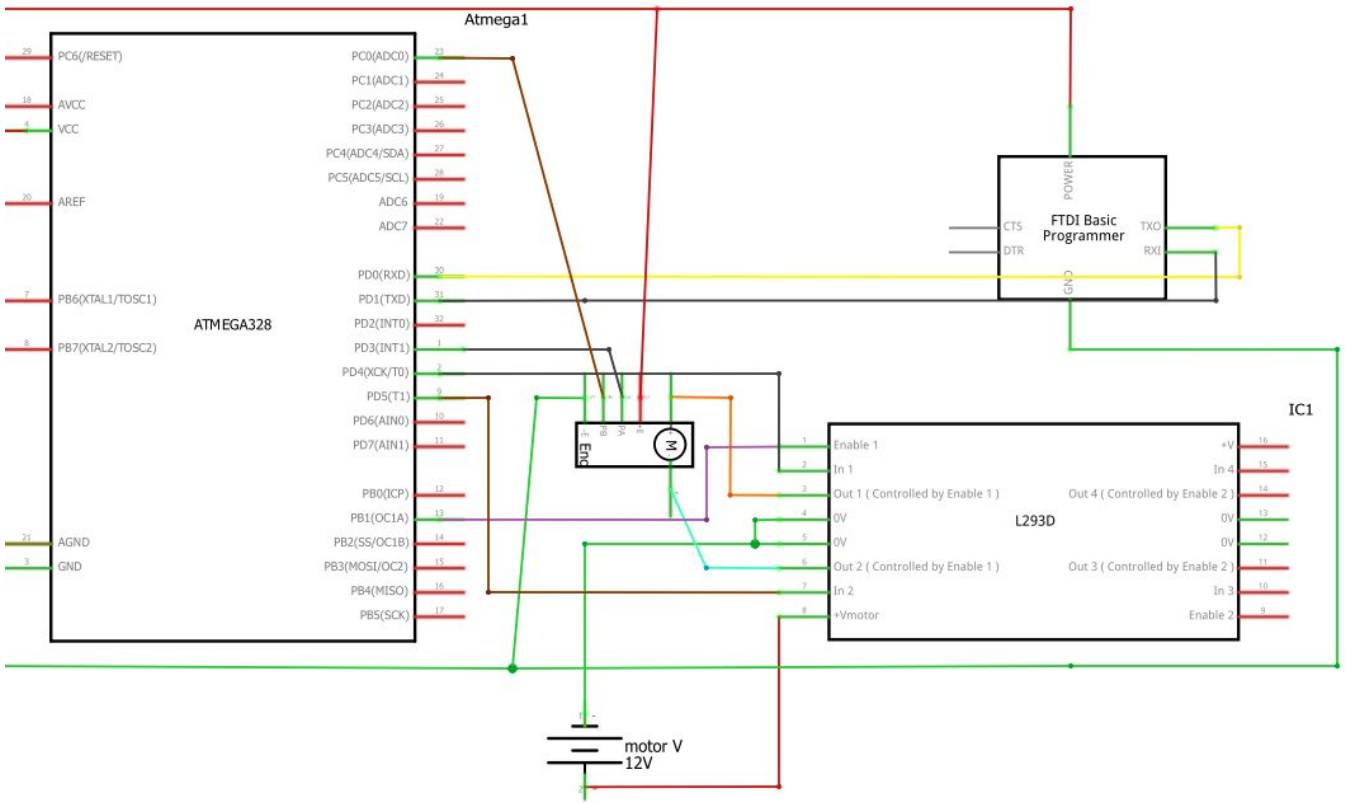
1. Use PID control to operate a DC motor with encoder.
2. Use encoder to convert rotation of motor to convert to speed
3. Using USART receive instruction from user for motor speed

ACCOMPLISHMENT

1. Design of user interface with USART

SCHEMATICS

Complete schematics



DESIGN STAGES

- **Components**

1. AVR ATMEGA328p
2. Actobotics 195 RPM planetary gear DC motor with encoder
3. L293D half-H driver
4. FTDI breakout board

- **Interfaces**

1. Atmega328p – DC motor with encoder –
2. Atmega328p - FTDI breakout board using USART-

CODE DEVELOPMENT

- Initialization

1. designed USART transmit/ receive data.
2. designed functions to utilized received data
3. improved functionality to receive data through interrupts, freeing loop for computation
4. tested motor speed control using PWM
5. UNFINISHED: Implement PID control of motor using encoder data as speed reference

- Data Collection

- input from USART
- UNFINISHED: motor rotation count via encoder

- Networking/Visualization

- none implemented

DEMO SNAPSHOT/VIDEO

circuit design implementation https://drive.google.com/open?id=1uparKXobRG1hbhrWyp3iZ6C2WNGryzDI

test output from USART https://drive.google.com/open?id=1coZexdgOvrwfS6thTiDBkJKUfftQfIPP

Group Projects

Student Name: Phillip Sortomme

Task Completed:

- USART interface
- Total circuit design

Contribution 100% towards the project:

Coding 100(%):

Implementation 100(%):

Testing/Demo 100(%):

Documentation 100(%):

Presentation 100(%):