Turtlebot

Hardware list

1 x Pi Zero – takes in GPS and sensor data from Arduino via USB connection.

1 x Arduino Feather 32u4 Adalogger – takes in data from IMU Fusion board, formats it and passes to the Pi Zero, takes in navigational information from Pi Zero and executes course corrections, controls 3 DC motors via PWM to motor controllers. Can also log and average sensor readings before passing to the Pi Zero.

1 x Adafruit IMU Fusion 9 DOF board – provides orientation and motion information to Arduino via I2C, includes accelerometer, magnetometer, gyros, and ambient temperature.

1 x Cell phone + GPS board – provides GPS data to Arduino and allows data download (SMS text) via cellphone connection.

1 x BMP085 – provides Ambient pressure and temperature data to Arduino via I2C.

3 x GWS ICS-300 speed controllers – converts PWM information from Arduino into DC voltage to control DC motors.

3 x DC motors – 1 to 3 VDC motors for forward motion, directional control, and diving.

1 x NiMH battery – provides 3.5 volts for cellphone and GPS board.

2 x 9VDC battery\* – provides power to Pi, Arduino, and motor controllers. These batteries may be replaced with higher capacity batteries.