JIBEBE

Be on the move

Internship 2022

Progress report format

Name: Allan Were

Tasks completed last week

- [#45] compass and GPS connection to the Mega board

The HMC5883L sensor is a 3-axis digital magnetometer IC designed for low-field magnetic sensing. The sensor has a full-scale range of +8 to -8 Gauss and a resolution of up to 5 milli-Gauss. Communication with the HMC5883L is simple and all done through an I2C interface. That means you will need to connect power, ground and only two cables to Arduino Uno board (SDA, SCL).

The HMC5883L board can be powered up by 5V or 3.3V pins of Arduino Uno board. No need to add any capacitors or resistors to your circuit. Pinout and connection with Uno:

- Vic to 5V or 3.3V
- GND to GND
- SDA to A4 □ SCL to A5
- DRDY to nothing...
  Because this is a magnetic compass if you put it near to battery, motors, metallic surface or magnetic field, the result will diverge from the actual.

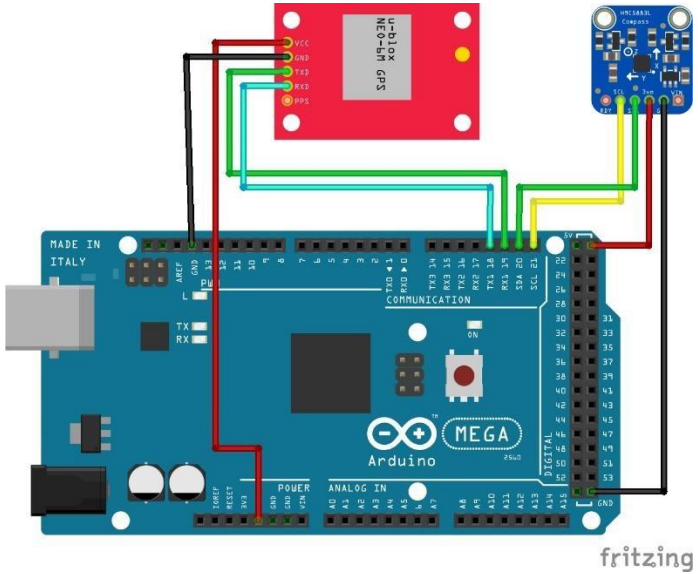

Figure 1 GPS & compass circuit

● [#38] Compass(HMC8883L) for the orientation and waypoint

The HMC5883L utilizes Anisotropic Magneto resistive (AMR) technology that provides advantages over other magnetic sensor technologies. These anisotropic, directional sensors feature precision in-axis sensitivity and linearity. These sensors' solid-state construction with very low cross-axis sensitivity is designed to measure both the direction and the magnitude of Earth's magnetic fields, from milli-gauss to 8 gausses.

Challenge of USING HMC5883L

- It is affected by magnetic interference from the DC motors . This can be avoided by raising the module few centimeters away from the base

Challenge of USING GPS

It cannot receive signal indoors

It takes along while to setup and pick up signals

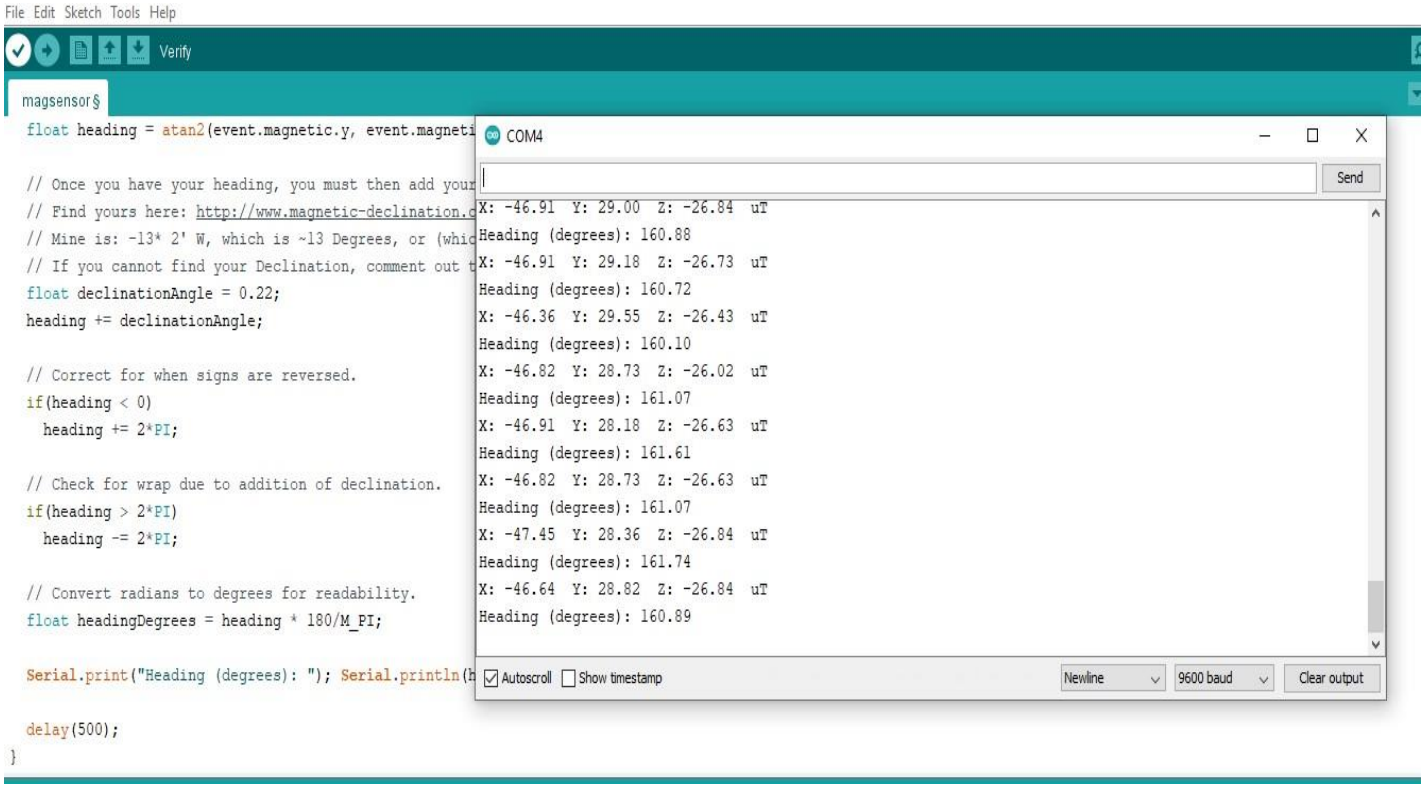

Figure 2 compass output

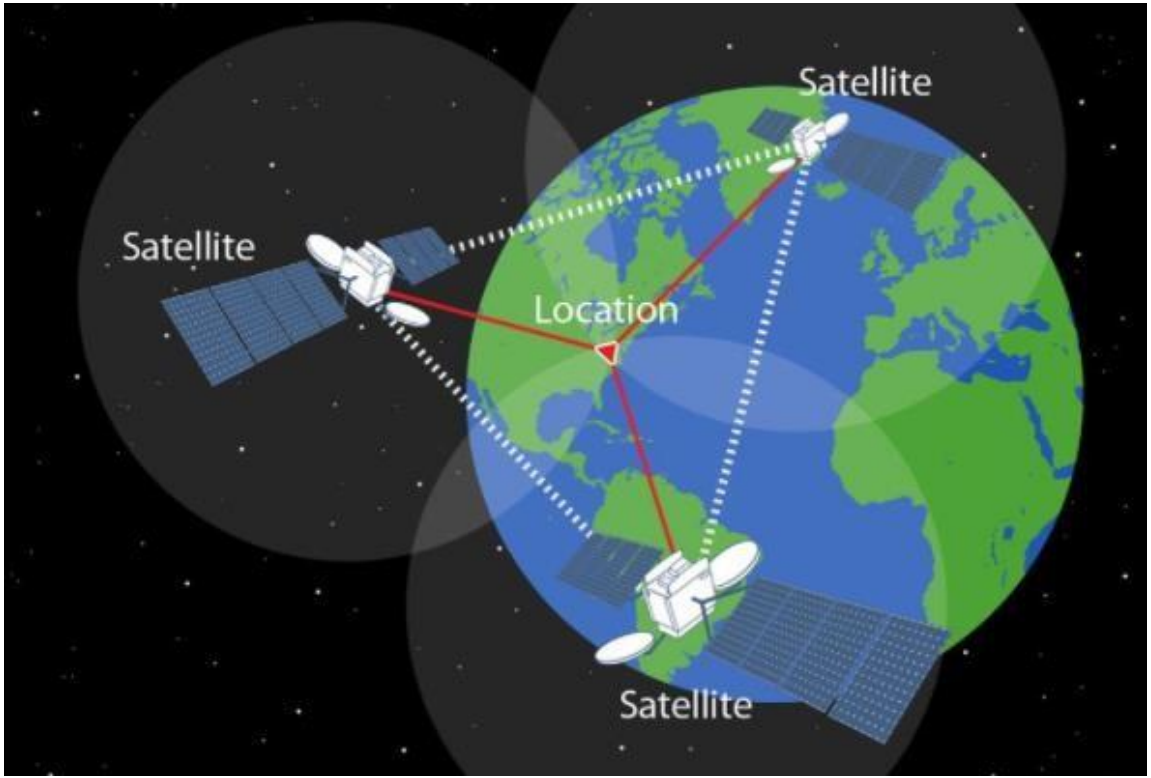

Figure 3 triangulation of location by satellites

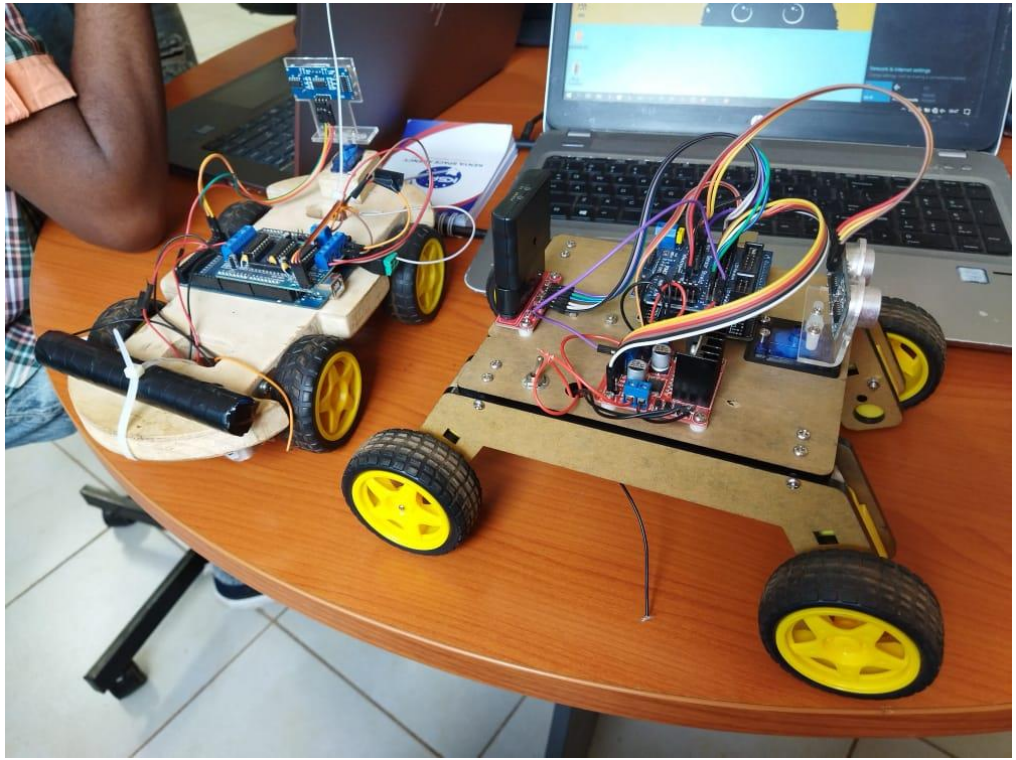

Figure 1 Car robots

Tasks in this week

- [#16] Definition of the path for the robot
- [#26] computer vision

Timeline

Month	Intern week	Tasks
Jan		
	Week 1	Identification of parts and drawing of the chassis diagram.
	Week 2	Circuit diagram and acquisition of parts.
	Week 3	Definition of the path to be followed by the robot car. Laser cutting of the parts.

Feb	Week 4	• Assembly of the robot • Ultrasonic program implementation
	Week 5	• GPS and compass navigation • Path definition
	Week 6	Object identification using computer vision. (Raspberry pi & camera)
	Week 7	Transmission of live feed and data from the robot (transmitter and receiver)

Week 8	Implementation of tillage program on the robot (gathering and casting).