**EE390 Lab 6**

**Subject**: I2C Interfacing & magnetic flux density measurement

**Description:** Configure the I2C2 module properly (setting the frequency of I2C to either 48-MHz or 80 MHz). Use the interrupt-driven approach to access the I2C peripherals on the STM32L475 Discovery IoT kit (B-L475E-IOT01A). Use the **LIS3MDL sensor** to measure the magnetic flux density.

* Set the full scale magnetic flux density to ± 16 gauss.
* Set ODR to 5 Hz
* Select high-performance mode.
* Select little endian format.
* Configure USART1 to 115200 baud and enable transmit and reception.

Measurements to perform:

1. Earth magnetic flux: align the kit to the north, east, and measure the magnetic flux density for five seconds and display the result on the monitor screen (run Tera Term). Display the measurements (x, y, and Z-axis) five times per second.
2. Place a magnet about half meter from your kit and measure the magnetic flux density at eight different orientation of your lab kit with respect to the magnet. Display your measurements on three axis (X, Y, and Z) on the monitor screen. Display the measurement results five times per second.

**Due:** 03/23/2023 (demo); 03/30/2023 (report)