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| Galway Mayo Institute of Technology |
| Smart Metal Detector |
| Project Proposal |

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| Paulius Miliunas  10-3-2019 |

**Smart metal detector**

**Project description**

Metal detectors work in a very interesting way. Transmitting coil creating a magnetic field which gets disturbed due to metal objects in the ground. Metal objects receive part of the magnetic field energy and create their own fields. These week fields create a disturbed signal on the receiving coil.

The coil driver module will generate few different frequencies, the modulator will add the to make square waves to drive transmit coil. Receiving the coil will pick up the magnetic fields from metal objects, produce a signal which will be amplified to levels for MCU to accept and process signals.

MCU will provide logic to the metal detector. It will connect to the smartphone through Bluetooth, where all settings and menus will be available. In addition, this metal detector will have an accelerometer to detect the position of it to draw the shape of an object we are detecting. The smartphone will be able to display this image for the user.

In the first semester, I will concentrate on the hardware side. I will experiment with coils; my goal is to achieve accuracy in detecting edges of objects. This will make shape draw more accurately.

Week 1 – 4 project planning and designing.

Week 5 – 8 Project prototyping and testing.

Week 9 – 12 Coil research and application.

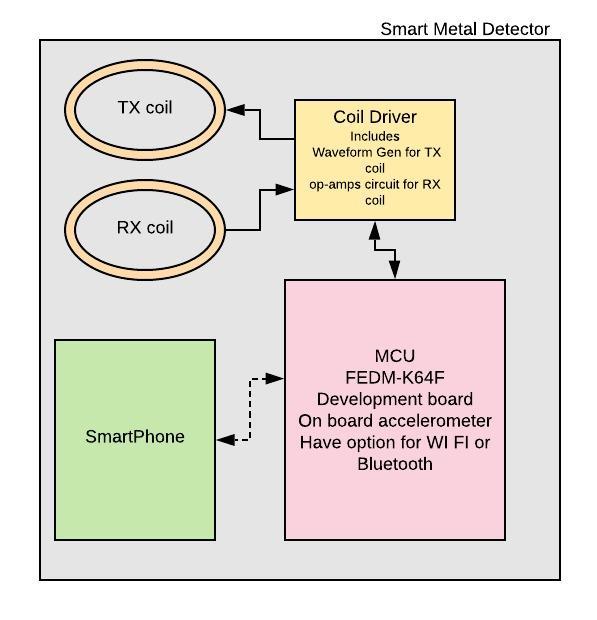
Week 13 – 16 Project demonstration preparation and poster design.

Project requirement:

Portable device. Lightweight for sear handling. Materials will be using such as aluminum and plastic.

The search head must be manually adjustable for signal correction.

**Architecture Diagram**

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