INTRODUCTION

After some time in which the colony thrived, it was clear that humanity had a chance. But still, mechanical parts needed to be built in order to upgrade the colony. Those mechanical parts needed magnets in order to be built and moreover, magnets are needed to build certain engines and other means of propulsion. On the other hand, we need magnetic rocks in construction industry to build walls to protect us against radiation So, we design and build a mobile robot for pointing the location of the rocks with magnetic proprieties on the planet (point the location of a hidden magnet). The magnet should be hidden under one of three rocks. The rocks are laid out in a line so that the robot can drive by the rocks while measuring the magnetic field of the area using a Vernier Magnetic Field Sensor. The location of the hidden magnet will be determined by feedback from the sensor of the strongest reading. The robot returns to the location of the hidden magnet and gives an audio indicator.

Figure 1: Our " magnet finder" looking for magnetic rocks on the planet

OBJECTIVES

In this project, we will:

- build a robotic device to identify the place where we can find the "magnetic rocks".
- use the NXT to determine the magnetic induction level of the place where the magnetic rock is placed.
- use a Magnetic Field Sensor and NXT to map the magnetic field along a bar magnet.

MATERIALS

- computer
- LEGO MINDSTORMS NXT Educational Set
- MINDSTORMS Edu NXT 2 software
- Vernier Magnetic Field Sensor
- Vernier NXT Sensor Adapter
- a small magnet
- 5-6 rocks

CONSTRUCTION

The Magnetic Finder was built to determine the "magnetic rocks" location. In order to find the magnetic field of our magnet, we build a motorized robot capable of moving in a straight line at uniform speed. This robot uses one motor in order to connect Vernier Magnetic Sensor using a Vernier NXT Sensor Adapter.

Figure 2 Our "magnet finder" using a side-mounted sensor holder

In order to make good measurements we switch on the Magnetic Field Sensor to 6.4 mT (low amplification). When the robot finds the "magnetic rock" it stops in front of it
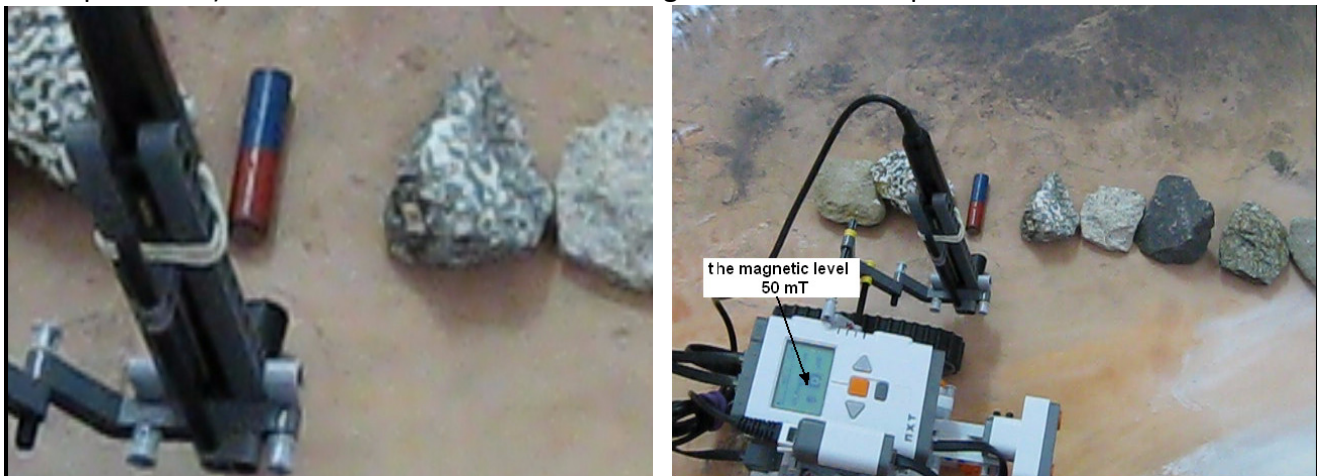
indicates the magnetic field level.Figure 3 Finding the hidden magnet and indicating the magnetic field level