Using a Computer Program to Compensate for the Force Differentiation Between Two Electromagnets Simulating Earth's Gravity in Space

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Can a computer program be applied to a small electromagnet so that when it is raised above a large electromagnet at different heights, the force will stay the same? The purpose of this experiment is to use a computer program to compensate for the force differentiation between two electromagnets by increasing and decreasing the current flowing through the smaller electromagnet as it moves to different heights above the large electromagnet. The hypothesis states that if an algorithm is created and applied to a smaller electromagnet moving at different heights above an electromagnetic assembly, then the algorithm will automatically adjust the current flowing through the smaller electromagnet accordingly to compensate for the force differentiation between the smaller electromagnet and larger electromagnet. To test the hypothesis, a small electromagnet force meter positioning apparatus was created. A computer program was created and applied to the apparatus linear actuators, ultrasonic sensor, and force meter. Using the program, the small electromagnet was raised and lowered at different heights above the large electromagnet and using the force reading on the force meter, the current flowing through the small electromagnet was adjusted to keep the force constant. The program was able to compensate for the differentiation and kept the force the same within about 98% of the theoretical data, proving the hypothesis. The algorithm also accurately adjusted the current required based on the changing height. This experimental concept can be used in a suit for astronauts to simulate Earth’s gravity in space.

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