Using a Computer Program Applied to an Electromagnetic Walking Apparatus to Simulate Earth's Gravity in Space

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Can an electromagnetic autonomous walking apparatus be created, and can a computer program be compiled and applied to it so that the force interaction between the electromagnetic "floor" assembly and the electromagnets on the walking apparatus simulate walking in Earth’s gravity in space? Astronauts experience muscular and skeletal degeneration in space, so they need a way to maintain their bodily health. The design utilized an electromagnetic assembly with a constant electromagnetic field achieved with a constant, unchanging electric current. The design also utilized three different smaller electromagnets with three different force meters to measure the force interaction between the small electromagnets and the electromagnetic assembly as the smaller electromagnets were moved to different positions and heights above the electromagnetic assembly with a computer program. The force interaction measured in the force meters remained the same due to the changing current flowing through the smaller electromagnets, which was also controlled using the computer program. The electromagnetic autonomous walking apparatus was tested with the small electromagnets off at maximum heights moving horizontally, at minimum heights moving horizontally, at varying heights with no horizontal movement, and at varying heights moving horizontally. These same tests were used while the smaller electromagnets were on. The final test consisted of all the small electromagnets being moved horizontally and vertically to simulate a walking motion with varying current to compensate for the force differentiation between the constant field of the electromagnetic assembly and the electromagnets on the walking assembly.

Awards Won:

Fourth Award of $500

Florida Institute of Technology: Full Tuition Presidential Scholarship

American Institute of Aeronautics &amp

Astronautics: First Award of $2000.00