ECE Senior Design Weekly Report

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Team Name: The Globetrotters Lab Section: 4

Week’s Task: Reverse engineering purchased levitating objects (to the best of my ability).

Results: This week I made it my goal to dismantle a levitating system that Chris had purchased and also a levitating speaker that Jake had brought in order to examine their parts and try my best to reverse engineer it in order to understand how they operate. With Chris’s help, we dismantled his model and noticed that four induced coils were used to levitate the magnet. After a closer look, along with the help of John Kennedy, we noticed that there were 16 transistors, each coupled with a coil along with many resistors, a voltage regulator, capacitors, and three microcontrollers. From there I researched the various components and their specs to see what role they play in levitation and tried to draw a schematic for the circuit (because one could not be found online). A day later, I was able to dismantle Jake’s model expecting to see a different form of levitation used (possibly a single large coil) but instead found that they were very similar in design. The levitating speaker utilized a larger base magnet because of the weight it has to support; however, the circuits seemed very similar in design. The levitating speaker was comprised of three PCB boards but could possibly be all supported on one just like Chris’s. Because of the similarities, I decided to focus on reversing Chris’s model’s circuit design because the layout was simpler and easier to see how each component was related to another.