

Comments on Project 2

The following were common to many of the reports. You should look over your report to see which of these apply to your work.

1. Plots showing voltages measured during speed measurements should be labeled and the information contained in the plots should be discussed. These plots should show where zero is. If you do not show zero, it is not possible to read the actual voltages. Label the ranges of time during which the coil is connected to the battery and when it is not. One expects the voltage to be about 1.5 V when the coil is not connected. If it is not, then maybe something is going wrong or the battery is getting old.
2. There should be a PSpice simulation or circuit calculations to go with the plots of measured voltages to be sure that they make sense. The circuit model should be used to justify the interpretation of the speed data. It can also be used to improve the design by considering tradeoffs between resistance, mass and inductance. Also, it can show how timing can change, which is one of the more significant design issues. (see next item)
3. Duty cycle should be discussed, both in terms of how large it is and whether or not the current through the coil aligns well with the coil position to produce maximum force in the desired direction.
4. The quality of the connection should be discussed. That is, does the signal show the coil bouncing?
5. Where the circuit parameters came from should be discussed (measured, calculated, found in a reference, etc.) and whether or not the numbers make sense should be addressed. In a few cases, the numbers presented were very far from reality.
6. For the circuit model, phenomenological terms can be added to achieve agreement with measurements, which can, in turn, possibly help to identify other issues that affect performance (like drag or balance). This means that additional resistances, for example, could be added beyond those easily identified.