

# MODELS HIGH LEVEL DIAGRAMS

## Background:

The motor and motor controller used for the electric car project is synonymous to a black box taking in electric inputs of current and voltage and give out mechanical outputs of torque and rpm. To better understand what exactly happens within this system, two characterizations, static and dynamic are necessary to observe the behavior when the car motor is moving in constant speed versus with addition of acceleration in figure 1 and 2 below:

### STATIC MODEL LEVEL DIAGRAM

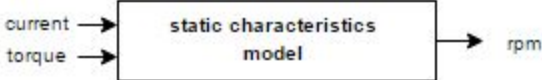


Figure 1: The static characterization models the forces involved in this black box to result in uniform speed

### DYNAMIC MODEL LEVEL DIAGRAM

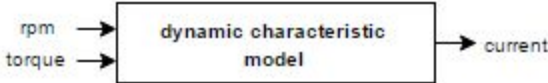


Figure 2: Dynamic characterization models the static model with an additional acceleration force in play.