Minitaur Motor Model
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The following model can be used to approximate the torque output for each of the Minitaur motors. VBatt changes with the duty factor applied via setOpenLoop(). Likewise, the current across each motor depends on the number of motors to which this duty factor is applied (this model does not currently account for applying different duty factors to different motors). The following MATLAB code shows the calculation for the torque given a duty factor applied a specified number of motors. Also note that the motors' torque is limited to about 3 Nm due to magnetic saturation in the coils.

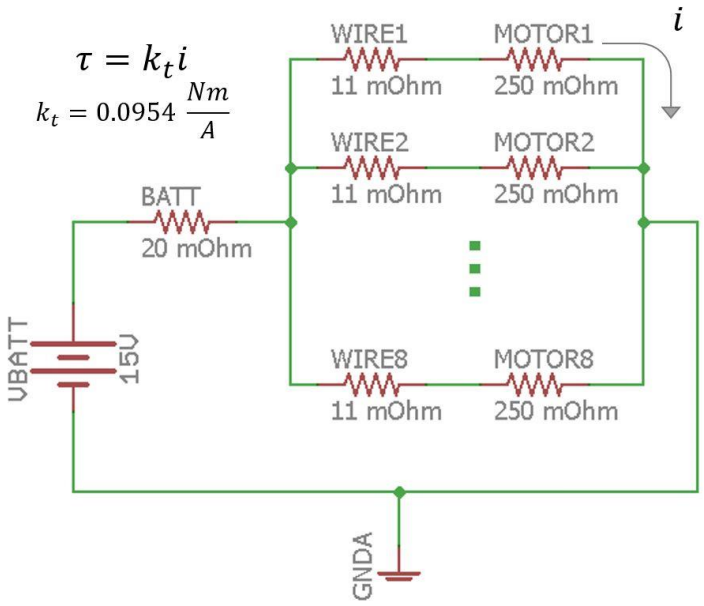

Figure 1. Minitaur motor model

```
numMotors = 8;
kt = 0.0954;
df = 1;

Vbatt = 15*df;
omega = 0;
Vemf = kt*omega;
V = Vbatt - Vemf;
Rbatt = 0.020;
Rmotorwires = 0.011;
Rarmature = 0.25;

Req = Rbatt + (Rmotorwires + Rarmature)/numMotors;
ibatt = V/Req;
imotor = ibatt/numMotors;
tau = kt*imotor
```