Project Phase 2: Rover Dynamical Analysis

MEEN 357-505

Udit Parikh & Yajat Jotwani

5.2, Task 2: Visualizing the Terrain

Chart, line chart

Description automatically generated

The figure above illustrates the angle of the terrain as a function of distance the rover has traveled. The greater the y-axis value, the steeper the incline. Points of the graph are interpolated, or connected with a cubic spline approximation. The angle between the known points can be extrapolated using the graph. However, since we assumed a cubic fit, we cannot be certain that this that the interpolations are accurate.

5.5, Task 5: Visualizing Motor Efficiency

Chart, line chart

Description automatically generated

The figure above shows the efficiency as a function of torque. Points of the graph are interpolated or connected with a cubic spline approximation. The efficiency between the known points can be extrapolated using the graph. However, since we assumed a cubic fit, we cannot be certain that that the interpolated values are accurate.

5.8 Task 8: Rover Simulation

Chart

Description automatically generated with medium confidence

The figure above shows how time affects position, velocity, and power output of the rover.

5.9 Task 9: Analysis of Energy Needs



Text

Description automatically generated

The energy of the battery