Drive System Design Specification, Miles Grist, May 2021

Motors

1. Efficient drive of motors
    - Conserves limited battery power
    - Based on the most efficient operating point of the motors and the dual H-bridge
2. Accurate speed control
    - The rover must move precisely in order to avoid obstacles and map the environment to a high precision
3. Accurate rotation control
4. Estimation of movement (for comparison with optical flow sensor)
    - Assume zero slip of wheels
    - Detect collision or terrain that stops the rotor by monitoring SMPS current
5. Interface for external control via the control subsystem
    - Stream of a vector $(speed, rate\ of\ rotation)$
    - OR desired change in x, y and angle, facilitated by a discrete controller

Optical Flow Sensor

1. Accurately record distance moved
    - Required to map the position of the rover and obstacles
2. Compare with the estimated distance from the motors
    - Gives idea of accuracy
    - May indicate any mistakes in the map or allow for correction
3. Make data available for the control subsystem
    - ??? Format currently unknown