tested. The design of the system will determine whether an accurate simulation system can be built. The development of this system will determine which procedures must be followed to obtain repeatable data and how the sensors and the test set-up are calibrated. Most importantly from an experimental standpoint, this study will analyze whether the weight will affect the pull force necessary to make a wheel roll across a surface.

The successful development and calibration of the test simulation system provided an incentive to conduct further research regarding torque calculation and rover wheel design. In the near future the study is expected to analyze how surface characteristics affect the necessary pull force. In an effort to eventually obtain a torque calculation, an attempt to determine what configuration set-up causes the wheel to begin slipping was made. In a true effort to develop a rover wheel capable of traversing multiple terrain, future studies will determine whether a wheel can be designed to operate more effectively without slipping on a given surface.

In order to affect the future wheel design of planetary rovers, it is essential to propose solutions that produce applicable findings. These findings ensure that further research will be conducted by proposing an applicable solution that will impact future designs of planetary rover wheels. Additionally, this data can also be applied to earth-based wheel operated designs. As a result, designs such as wheel chairs, scooters, and cars can benefit from a design-based feature that allows for

“The scientists and engineers thought very critically about every move the Sojourner made because of the wheel-slippage the rover experienced. The terrain challenges that the Sojourner rover encountered on Mars were taken into significant consideration by professionals within the field, resulting in published papers on wheel-slippage. However, no applicable improvements have been released as to an improved and functional wheel design for the planetary rover. Due to several factors involved in space exploration, the wheel-surface interaction and concerns surrounding wheel-slippage represent the need for improvements in planetary rover wheel designs for future space missions.

Influencing better wheel designs for future planetary rovers requires conducting a series of three or four experiments in an attempt to reconcile several contributing agents associated with wheel-slippage. These agents consist of wheel design, wheel load, surface conditions, and design limitations. Currently, the focus is on the draw-bar pull produced from three different wheel designs tested on a simulated Martian-like surface. In an effort to build a working test simulation system and collect meaningful data in reference to the tested wheel designs, a set of hypotheses were derived. This study seeks to design and build a test simulation system that will allow for multiple wheel-designs to be