To better understand the surfaces, atmospheres, and geographic properties of planets in the solar system, planetary rovers were invented. On sandy, rocky terrain planetary rovers have engaged in loss of traction and wheel slippage. In order to investigate wheel-surface interaction, an automated test simulation system was designed and built in the University of Maryland Space Systems Laboratory. Using this system, experiments that calculated that the draw-bar pull at varying weights were conducted. Design properties were suggested for future planetary rovers, based on the trends produced among the tested wheel designs. The original draw-bar pull equation was manipulated for each of the aforementioned experimental conditions.

One of the major issues surrounding wheel-surface interaction is the wheel-slippage issue. Presently, no valid explanations exist as to why rovers are unable to avoid wheel-slippage on planetary surfaces, specifically on Mars. The primary goals for a planetary rover are the capacity to navigate in an unknown, hostile terrain, recognize and negotiate obstacles, deploy scientific instruments, and acquire samples from scientific targets. Sojourner is a rover that was designed for the Mars Pathfinder mission with the distinct robust mobile capability to traverse hostile and challenging terrain. Although the Sojourner made astounding landmarks as the first rover to successfully land and explore the Martian surface, it also experienced several problems related to navigating through the rocky, clay-like, sandy surface. In spite of all the issues that Sojourner faced while attempting to navigate through the intransigent Martian surface, the one that created the most frustration among the NASA Jet Propulsion Laboratory scientists and engineers was the issue surrounding wheel-slip-